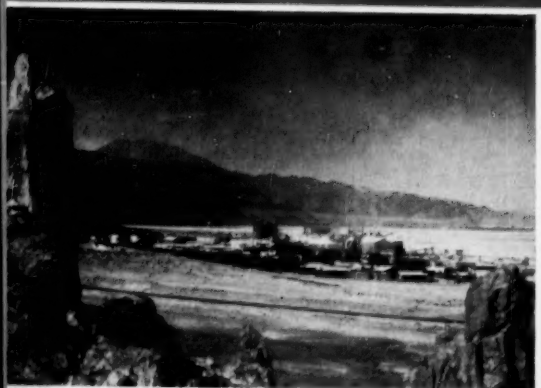


Chemical Week

June 18, 1955

Price 35 cents



What's the small businessman's niche in chemical manufacturing? Here's an appraisal p. 38

▶ **West End Chemical adds a salt cake string to its borax bow in diversification program . . . p. 22**

▶ **Can-makers' research provides new containers for chemical specialty products p. 56**

Conference emphasizes old but easily forgotten truism: researchers are people p. 69

New aniline output won't go begging; reason: rubber and textiles take more p. 89

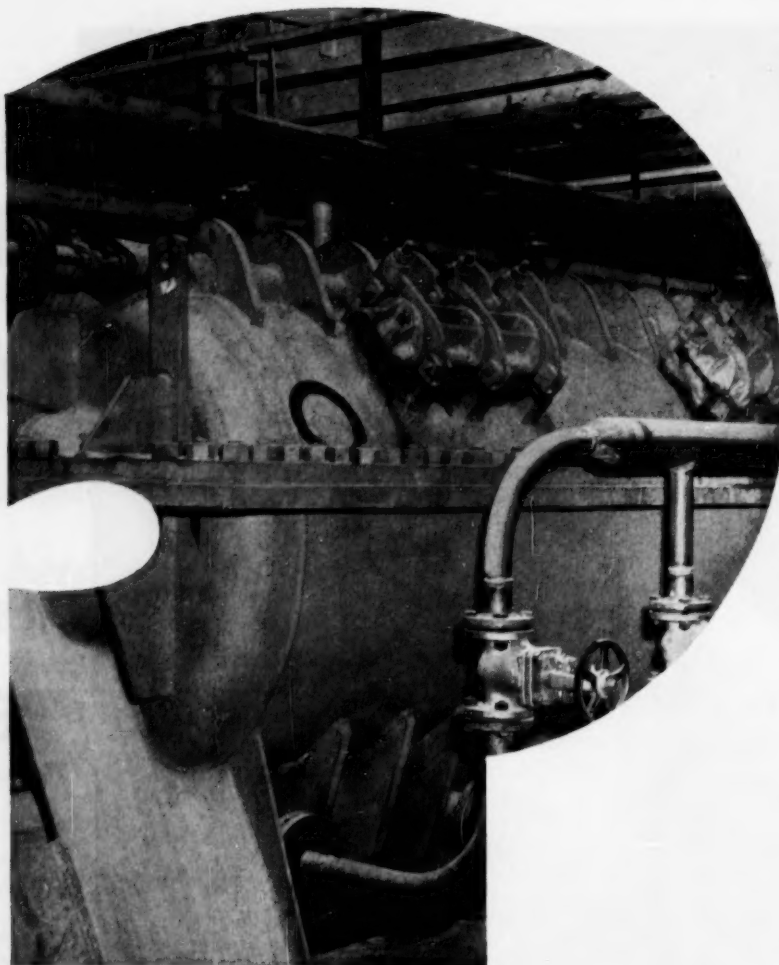


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Chemical Week

Volume 76

June 18, 1955

Number 25

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Handling

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polyamides (nylon) · rayon
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ACRYLICS are successfully handled in storage tanks, heat exchangers, distillation towers, reactors, piping and textile machine parts made of ALCOA Aluminum.

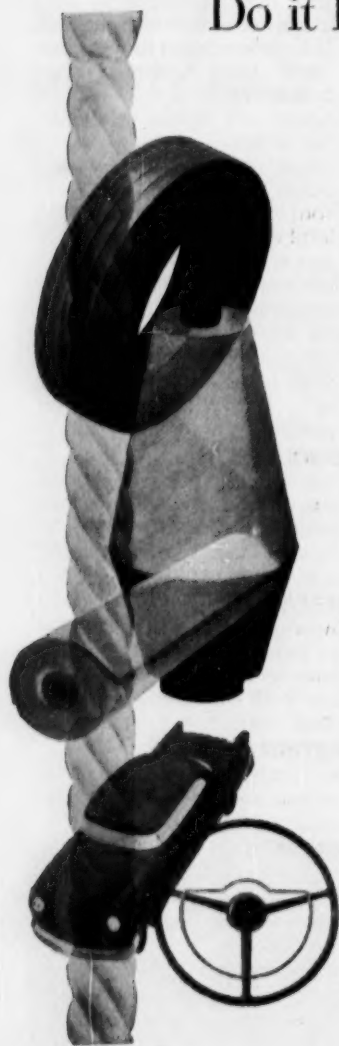
SYNTHETIC FIBERS, as well as their ingredients, are handled in ALCOA Aluminum process equipment and tankage. In the production of *nylon*, for example, aluminum storage tanks, tank cars, piping and textile machine parts are used. The *rayon* industry makes extensive use of ALCOA Alu-

minum, including aluminum hoods, ducts, desulfurizing equipment, piping, tubing, extractors, pallets, conveyors, precipitators, traverse bars, guide holders, gear covers, separator blades, reel frames, emulsion rolls, spinning compartment covers, spools and buckets.

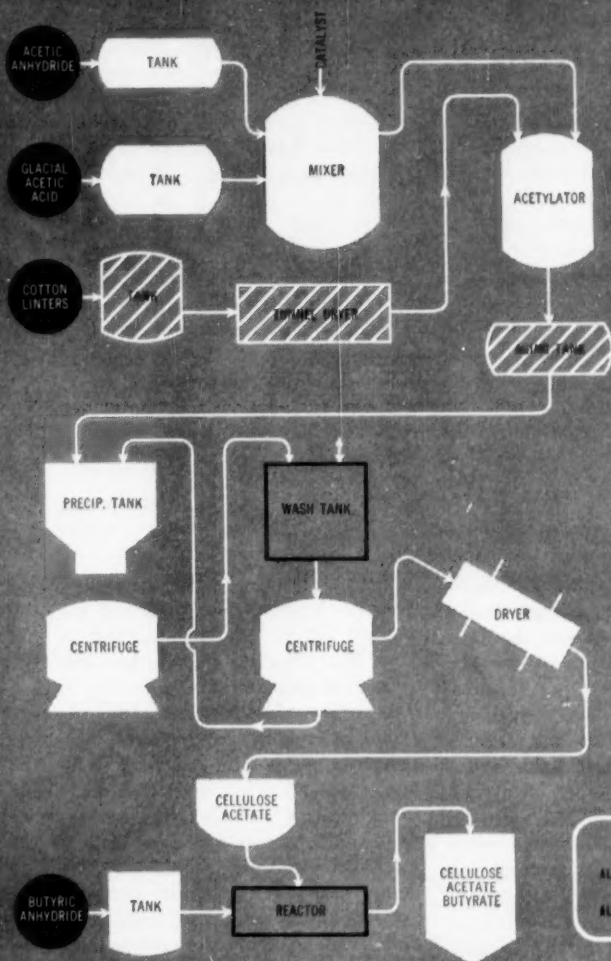
ACRYLONITRILE has no action on aluminum even in the presence of moisture. ALCOA Aluminum distillation, piping and storage facilities are used to prevent the discoloration of the product.

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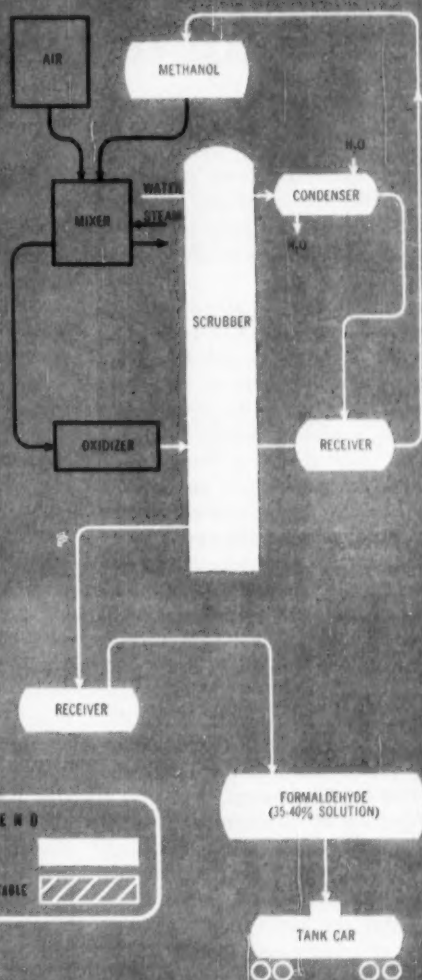
FORMALDEHYDE, when pure, has no action on aluminum. ALCOA Aluminum distillation towers, scrubbers, storage tanks, piping, heat exchangers, shipping drums and tank cars are in service. Commercial formalin solutions may cause an initial self-stopping attack.



PRODUCTION OF CELLULOSE ACETATE AND CELLULOSE ACETATE BUTYRATE



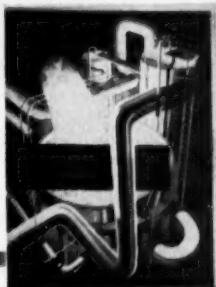
PRODUCTION OF FORMALDEHYDE



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Let's Skip the Whitewash

"The government has launched an all-out campaign to restore public confidence in the Salk polio vaccine. Surgeon General Scheele started the ball rolling by appearing on NBC's 'Meet the Press' TV program." That's what a dispatch from Washington says.

In our opinion, it's about time. But if the utterances of Dr. Scheele—both on that TV program and during the past two months—mirror what the government plans to do, the odds are that not a whit of public confidence will be restored. For seldom, if ever, have we seen anyone—or any government bureau—indulge in such a welter of platitudinous mumbo-jumbo.

Dodge, duck or feint—that's what Public Health seems to have busied itself doing. Conjure up pleasant words and mellow phrases; issue meaningless statements but embellish them with an aura of reassurance; "sell" the public; but avoid any tinge of forthrightness—it might prove to be disturbing. That characterizes, to our mind, the tack that has been taken.

Perhaps it is, of course, that some of what has been said is true; but much of it demands a great deal of believing. Indeed, most of the statements indicate that either the spokesmen were (1) bereft of clarity of thought, (2) quaintly ignorant of the facts, (3) conditioning what they were saying with an eye to political consequences.

But public confidence they now seek. And public confidence they might well earn if they attribute a certain degree of intelligence to the public and act with appropriate forthrightness. But public confidence they will never realize by continuing to indulge in such wandering comments and coy evasions as has been the case for nearly two months.

The words emanating from Washington have been many; the factual content of the emanations has been slim. There's no gainsaying, of course, that the publicity drummed up by the Polio Foundation—which after all, as a fund-raising organization, has long had to rely on publicity as its life-blood—resulted in an inordinate amount of pressure being put on Public Health to get the vaccine made and

distributed quickly. The demands of an aroused public put the government in an extraordinarily difficult position. Nonetheless, rather than outlining the supply-demand situation candidly, Public Health made promises one day, broke them the next, reinstated them the third. It asserted its faith in the vaccine one Friday; on Monday cancelled all vaccinations. It even, on one occasion, said that although the incidence of polio among those vaccinated was fivefold what might be statistically expected, this was not necessarily significant.

There has not been, until very recently, any candid admission that the Biologics Laboratory was only spot-testing batches of vaccine (which, possibly, was all that was practical). On the other hand, however, there has been much fanfare about what the government was doing to re-examine protocols and how it was dispatching flying squads to appraise the facilities and procedures of the pharmaceutical makers. The release of one lot of vaccine was highly publicized with the plain suggestion that the reason it was cleared was because the protocol and plant appraisal program had established its safety. Perhaps it might have been mentioned that part of this batch had already been used to vaccinate several hundred thousand children. When no trouble arose (after an appropriate interval) the remainder was cleared.

Too, the bureau has shied from mentioning that the testing standards had been changed—"simplified," as it were. However, last week, after declaring that the vaccine has always been "safe," Public Health stressed that it has set up new tests to make it "safer." Safer than safe, apparently.

Nor has there been any admission that the inactivation of virus by means of formaldehyde is an inherently delicate procedure. It is—and virologists have long known it. Now, it appears, some recognition is being accorded this fact—"a better process" has been established. The manufacturers, we might be led to gather, are the guilty ones. Whether their product met the standards set by Public Health is, it might seem, irrelevant.

The Dept. of Health, Education & Welfare is, by its own assertion, responsible for protecting the health of the public. Its handling of the Salk vaccine problem has not, to our mind, been of the standard or character we might all expect. It lost the confidence of the public—and deserved to. We suggest that it stop whitewashing its own activities; that it subordinate the "soap opera" type TV approach and replace it with a forthright exposition of the why's and wherefore's for an adult, intelligent audience.

Then, and only, then, in our opinion, will it regain any degree of public confidence.

W. Alec Jordan
Editor

Gnats and Camels

TO THE EDITOR: We were *not* impressed by Mr. Bateman's letter in your May 28 issue wherein he takes a crack at cooperatives.

It seems too bad that some ordinarily rational people let their blood pressure mount to the boiling point when cooperatives are mentioned. Their only thought seems to be that since privately owned corporations are doubly taxed, cooperatives should also be doubly taxed. It is no more right for private corporations to be doubly taxed than it would be for cooperatives, and we cannot cure one evil by creating another.

For another thing, why can't these enemies of cooperatives see that their really unfair competition is the thousands of businesses operated by the federal government?—the Hoover Commission reported more than 2,500 operated by the Defense Dept. alone (see also p. 26 of your May 28 issue). These federally operated businesses pay *no* taxes of any kind; and to compound the injustice, we are all taxed to provide them with working capital and to absorb their losses.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

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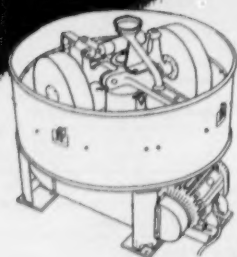
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OPINION

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Since this is an expression of my personal thoughts, I would appreciate your not mentioning the organization of which I am a part.

T. D. DUNSCOMBE
Columbia, Mo.

Poly Drums

TO THE EDITOR: Re the news article "Squeeze Barrels" (May 21, p. 94) . . . we would like to mention some points . . .

The title "Squeeze Barrels" is not appropriate since these barrels are nearly rigid and cannot be squeezed. Furthermore these drums are manufactured by Pirelli in Italy; Montecatini is the supplier of the polyethylene molding powder needed to manufacture the same.

Pirelli and Montecatini jointly designed the new 50-liter drum, which combines the advantages of an aluminum drum manufactured by Montecatini and of a polyethylene carboy manufactured by Pirelli, both of the same 50 liters capacity (about 13 gal.) . . .

M. L. OTTOLENGHI
Chemore Corp.
New York, N. Y.

Right. We used the word "squeezable" in the title too loosely. The drums, incidentally, are being sold in the U.S. by Pirelli.—ED.

DATES AHEAD . . .

Forest Products Research Society, national meeting, Olympic Hotel, Seattle, June 21-24.

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N.J., June 26-July 1.

Society of the Chemical Industry, annual meeting, University of Birmingham, Birmingham, England, July 11-16.

American Soybean Assn., Natl. Soybean Processors Assn., joint meeting, Netherlands Plaza Hotel, Cincinnati, Aug. 29-31.

Atomic Industry Trade Fair, Sheraton-Park Hotel, Washington, D.C., Sept. 26-30.

Federation of Paint and Varnish Production Clubs, annual meeting and Paint Industries' Show, Statler Hotel, New York, Oct. 3-5.

Chemical Week • June 18, 1955

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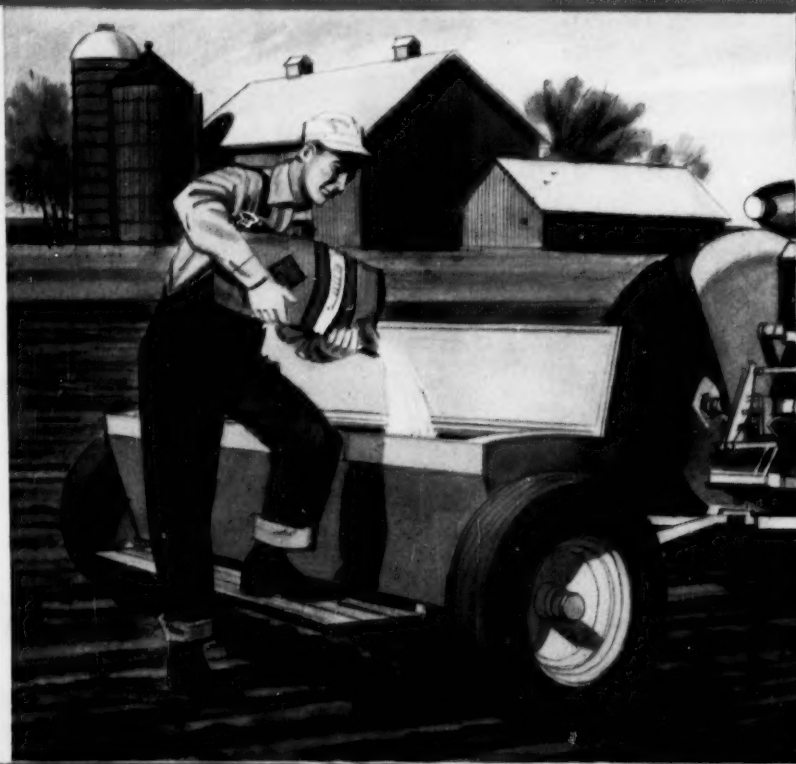
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CW 6-18

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spotlight on

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in oleic acid

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increased sales appeal of premium shampoo



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NEWSLETTER

As if chemical makers needed any more glowing report on business prospects in the months ahead, the Chemical & Rubber Division of the Business & Defense Services Administration has come up with a fresh set of figures. Except for the petroleum industry, the report states, annual capital expansion outlay per production worker is higher today in the chemical field than in any other manufacturing activity. (It's now \$1,894/worker in the chemical industry, \$813/worker for all manufacturing.)

Moreover, the gap's bound to keep on increasing in the months ahead. Why? Increasing automation and developing new production processes are a heavy financial drain on chemical producers, require extensive equipment. And, at the same time, continual developments of new techniques and products actually increase the rate of obsolescence, cause an ever-increasing rate of depreciation charge-off.

Therefore the chemical business is now like a spiral staircase upward—one step supports the other—with all indications that the end's not yet even in sight.

•
Topping the list of this week's expansion planners is Weyerhaeuser Timber Co. of Tacoma, Wash., which has selected Cosmopolis, Wash., as the site for its proposed \$20-million, 400-ton sulfite mill. Construction starts late this year; completion is scheduled for 1957.

•
Not far behind (but still up in the talking stages) is the \$9-million ammonia plant Olin Mathieson is planning to build (in collaboration with Quebec Ammonia Co.) at Varennes, Que. Construction of the 115-ton/day plant should begin within 15 months; most of the output will go toward production of fertilizers.

• Even more solid: plans for construction by Canadian Industries (1954) Ltd., of a \$9-million ammonia plant at Millhaven, Ont., due in by late summer, 1956. CIL officials say the 200-ton/day plant will not only produce ammonia for captive use, but will also have supplies for sale.

A battle for the Canadian ammonia market could ensue. Olin Mathieson's decision to go ahead would be, in part, based on its desire to retain its Canadian market in ammonia by meeting local freight rates. Many of the customers it would have to gain, however (to put the plant on an economic footing), are old CIL customers.

•
Even the tariff picture seems to be brightening for most chemical producers this week. Tariffs on coal-tar intermediates were not reduced, as had been feared, in the Japanese Trade Agreement Pact signed at Geneva. And the Trade Agreements bill (H.R. 1) came out of the House-Senate conference in virtually the same shape in which it had passed the Senate.

In all, tariffs on only six types of chemical products were sliced during the course of the lengthy multi-nation Japanese negotiations. (Included: monosodium glutamate preparations, cobalt salts, tanning extracts, agar agar, menthol, camphor, and saffron.) In exchange for these reductions, the U. S. obtains concessions on a number of pharmaceuticals, cosmetics and toilet preparations.

The only producers likely to be hit hard by the horse trading: monosodium glutamate producers, chief among which is International Minerals & Chemical. Reason: Japan's production capacity is now listed at 15-20 million lbs./year—roughly two-thirds of which is immediately available for export.

•

Not faring nearly so well in the political scramble that has developed out of the Salk vaccine muddle is the Public Health Service. In establishing a Division of Biologics Standards to control biologics regulations, Public Health is openly admitting an administrative mistake—one with very serious overtones.

Until recently, regulation of biologics was handled by the Laboratory of Biologics Control in the National Biological Institute—an organization frankly more interested in research than in regulations.

In setting up an entirely new bureau, PHS is finally recognizing what pharmaceutical makers have been saying all along—that control over distribution of the Salk vaccine was the area of negligence in the recent polio fiasco.

•

This week the National Science Foundation is knuckling down to a hard chore, too—that of preparing its heralded manpower report for publication (*CW Newsletter*, May 28). Based on a Bureau of Labor Statistics survey of 200 major companies engaged in industrial research, the report (according to Alan Waterman, NSF director) will show that somewhat over half of the firms interviewed are suffering research scientist and engineer shortages; and one-third report "major shortages."

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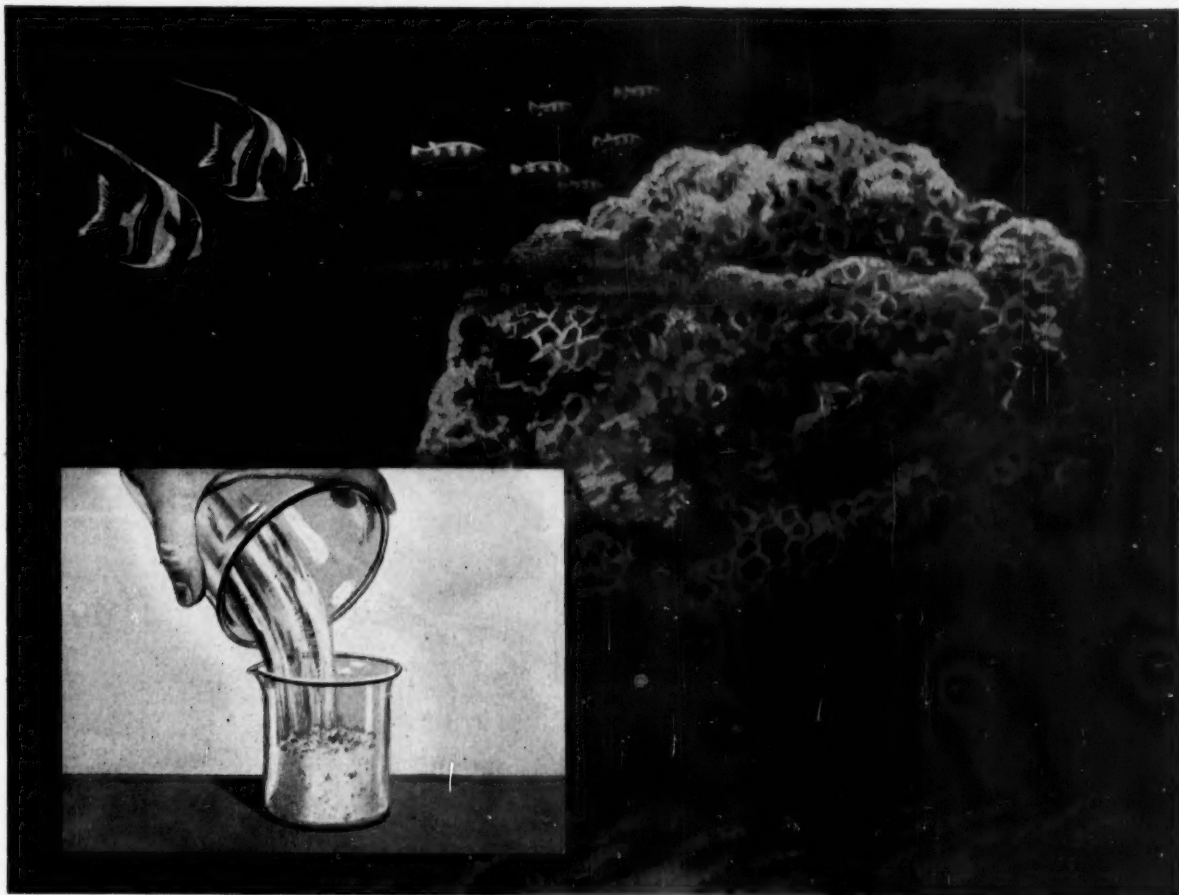
Details on a recently completed government survey concerning the time necessary to restore production of essential items (including chemicals) in case of hydrogen bomb attack won't be released, however—at least in the very near future. Priority that the individual company can expect, though, is roughly this: first aid will be given to any plant that turns out 25% or more of the U. S. supply of a single item classified as "essential"; next priority will be granted to those that produce between 10-25%. Reason for the security classification on which specific companies are named on the government's list: the run-down would spotlight prime attack targets, make it too easy for an enemy to pinpoint weak spots.

•

Even the Texas legislature seems to be smiling on the chemical industry this week, has ended its session without passing on any of the proposals to "soak" petrochemical and chemical firms doing business within its state's borders (*CW Newsletter*, May 21).

•

Industry protests on TVA fertilizer production seem to have fallen on receptive ears, too. The House Appropriations Committee, heeding objections from makers of phosphoric acid who sell their product to makers of diammonium phosphate, and from DAP producers themselves, has instructed TVA not to make more than 5,000 tons of diammonium phosphate during fiscal 1956. (TVA had intended to turn out 20,000 tons.) Says the committee: "Now that industry has indicated a willingness to expand its production, most of the objectives sought by TVA in gaining wider availability and use of the product have been accomplished."



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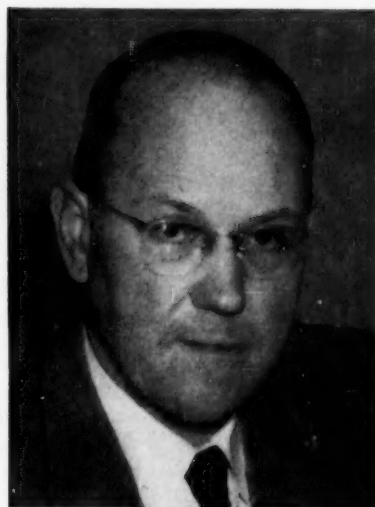
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BUSINESS & INDUSTRY. . . .



HOOVER, CREASY: New MCA board chairman and keynote speaker at . . .

White Sulphur Get-Together

First order of business at last week's 83rd annual meeting of the Manufacturing Chemists' Assn. at the Greenbrier, White Sulphur Springs, W. Va., was the election of J. R. Hoover (president, B. F. Goodrich Chemical Co.) as new board chairman. Hoover succeeds Fred Emmerich, president of Allied Chemical & Dye Corp.

MCA also re-elected William Foster as full-time president and director of the association, named William Ward (vice-president of Du Pont) as chairman of the executive committee succeeding Charles Munson, board chairman of Air Reduction Co.

Howard Bunn (executive vice-president Union Carbide and Carbon Corp.) was re-elected as vice-president; J. Albert Woods (president, Commercial Solvents) was likewise named a vice-president.

President Resigning: Following his re-election as permanent president of MCA, Foster, however, immediately expressed his regret that "within a very brief period" he must resign both as president and as director, "due to the pressure of other commitments." He intends to remain in his present

capacity until a successor to the office can be named.

Sobering Words: Principal speaker at the joint MCA-SOCMA opening day meeting was Major General William Creasy, Chief Chemical Officer, U.S. Army. Warning that the threat from chemical and biological weapons in a future war "can be just as great as the threat from atomic weapons," Creasy pointed out that the strategy "next time" will probably be to preserve physical plant facilities (for use in the postwar period), and neutralize their productive value by attacking the human element.

That means that any future enemy of the U.S. would emphasize development of chemical and biological agents with a view to causing poisoning, sickness, radioactivity or mental derangement of workers.

What the Army's Doing: To defend against just such a possibility, Creasy went on, the Army has developed chemical detectors that "within a matter of minutes can not only reveal that bacteria are being spread in the air, but can also identify the bacteria being used." Moreover: masks have been

developed (cost: \$2) that can screen out not only poison gases, but bacteria and radioactive gases as well.

Available as plant protection: special protective materials (in the form of wallboard) that can be used to protect workers, and smoke screens to reduce heat-affected area to size of the area destroyed by blast pressure.

The government is also working on further defensive measures to protect against deaths from nerve gas.

Of Loyalty and Jobs

Particularly if your company is directly or indirectly in defense work, your job policies may be affected by three issues heading for decisions next year.

Mrs. Doris Walker—an alleged Communist whose discharge by Cutter Laboratories was upheld earlier this year by the California State Supreme Court (*CW Newsletter*, Jan. 29)—is asking the U.S. Supreme Court to reverse that decision. This may lead to a ruling on whether Communist associations are grounds for discharge.

In another case, the U.S. Supreme Court has agreed to rule on the constitutionality of two laws that the federal government has started to use as a weapon against Communistic leadership in labor unions. The laws provide that a union found to be Red-led can no longer use National Labor Relations Board services and must identify itself as a Communist action group.

The high court last week branded as illegal the government's ouster of Dr. John Punnett Peters as medical research consultant. The Engineers & Scientists of America had intervened, hoping to prevent similar "dismissals without due process of law" under the Industrial Personnel and Facility Security Program. However, the Supreme Court's ruling was based on a technicality of jurisdiction, leaving ESA still looking for a decision on whether an employee in a loyalty hearing has the right to cross-examine those who testify against him.



CALHOUN MILLS: Producing 160,000 tons/year of newsprint, due for a . . .

Three-Phase Expansion

In a series of expansion moves planned to make it the world's largest paper producer, Bowaters Paper Corp. directors will spend upwards of \$25 million in the U.S. alone. According to estimates made last week at the firm's annual stockholders' meeting in London, the U.S. expansion program will be completed by the fall of 1956; by 1957 the output of Bowaters Southern Paper Corp.'s mills will total some 270,000 tons/year of newsprint. Because of the "complexity" of its program, says Sir Eric Bowater, board chairman, the U.S. subsidiary will undertake its contemplated expansion in three phases:

- Phase one, authorized last January, is now under way, will be completed in early October, and is aimed at increasing present production by removing certain bottlenecks in the operation. Chief emphasis will be laid on increasing efficiency in the company's sulfate mill and bleaching units.

- Second part will involve expansion of virtually every department of the company's Calhoun facilities—from wood handling to shipping. Included: installation of a completely new 276-in. newsprint machine.

- Third phase involves installation of equipment to provide pulp to be produced from local hardwoods.

Rapid Increase: When all parts of the program have been completed, annual production at Calhoun will have been raised from 160,000 tons of

newsprint and 65,000 tons of kraft paper to 275,000 tons of newsprint.

Food for Thought

The Senate last week made a quiet try to put Congress back into the business of legislating individual tariff rates—a job that has been handled by the Executive branch for 20 years under the reciprocal trade program. The move, if it isn't blocked by the House, will set a precedent for Congressional tariff-setting that could seriously undermine Eisenhower's trade liberalization program.

The Senate in effect boosted the tariff on hardboard imports more than 100% by reclassifying it for duty purposes as a wood product instead of a paper product. The reclassification was tacked as a rider onto a bill to extend duty exemption for gifts sent to the U.S. by soldiers stationed overseas.

Administration trade officials are alarmed by the implications of the Senate action—despite the fact that hardboard in itself is not an important import item. What worries them most is this: once Congress starts setting tariff rates, there's no telling where it will stop. There's a fair-size list of imports on which duties could be raised merely by changing their tariff classification. Beyond that there's the possibility that reclassification would set a precedent for changing duty rates themselves by legislation.

Antitrust Curtain

It took three years and ten days to do it, but McKesson & Robbins has just proved its point in court: that a manufacturing concern that also does some of its own wholesaling business is entitled to set "fair-trade" price schedules for other wholesalers.

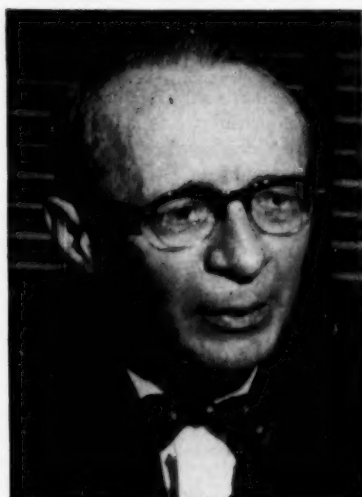
To put it another way, a company that has both manufacturing and distributing divisions can take advantage of the McGuire Act and various state fair-trade laws without violating the Sherman and Clayton antitrust laws.

Following last week's decision by Judge John Clancy (in U. S. District Court at New York) that put McKesson's fair-trade contracts in the clear, company President George Van Gorder called the decision "heartening" for the drug industry.

The issue came into the open three years ago when the Justice Dept.—then headed by Attorney General James McGranery—filed a civil antitrust suit in which McKesson was named as defendant and numerous independent wholesalers as coconspirators (CW, June 7, '52 p. 15). The government had charged that fair-trade contracts between McKesson's manufacturing division and those wholesalers constituted an unlawful price-fixing combination of people who should be competing against each other. Judge Clancy held that the contracts were "vertical" in nature and thus permissible.



VAN GORDER: For producing and distributing firm, freedom to set prices.



CIO'S KNIGHT: On GAW plan, a prediction: it'll 'undoubtedly' spread.

Sighting New Goals

Next year or so, labor unions in the chemical process fields may get around to asking for some form of guaranteed annual wage plan; but right now, the compromise settlements in the auto industry are inspiring the chemical unions to look instead toward new bargaining goals on other benefits.

Most enthusiastic about the new auto industry terms: O. A. Knight, president of the Oil, Chemical & Atomic Workers (CIO), whose congratulatory telegram to CIO President Walter Reuther declared that workers in all industries would benefit from "the historic accomplishment" of the CIO's United Auto Workers.

Knight—a vice-president of CIO—says that the oil companies and the basic-chemical producers usually provide regular employment throughout the year; but adds that "there are some branches of the chemical industry that schedule their work on a feast-or-famine basis, causing considerable hardship to employees." He predicts: "This new concept undoubtedly will spread into other industries, especially where it's seriously needed."

GAW in heavy-manufacturing industries will be indirectly helpful to chemical employees, says Secretary Marshall Shafer of the International Chemical Workers (AFL). He thinks the GAW issue can be used to help gain other bargaining requests, and that the effect of GAW will be to in-

duce general increases in unemployment and pension benefits.

President A. D. Lewis of District 50, United Mine Workers, says his union will keep right on plugging for employment stability and employee security, along with wages, hours, and other conditions of employment. He disdains to comment on the Detroit settlements.

ICWU and District 50 say they have no immediate plans for seeking GAW in specific contracts; OCAW only says that if it does have such plans, they'll be discussed "through the regular channels of collective bargaining."

Vaccine in Court

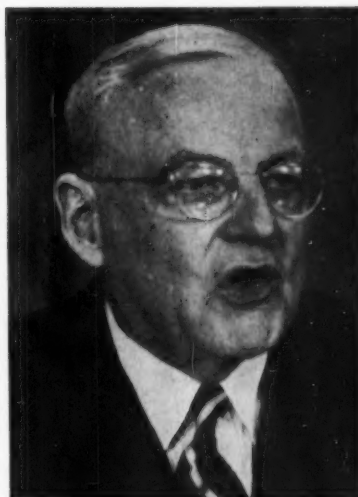
When a pharmaceutical company lives up to state and federal regulations in production of a health product backed by a public service organization,* should that company be held liable for damages when a user of that product is stricken?

This question is posed by litigation in connection with cases of polio contracted by persons who had been vaccinated with Salk vaccine made by Cutter Laboratories of Berkeley, Calif. The first of several such anticipated lawsuits was expected to be filed this week in state superior court at Oakland, Calif., on behalf of 4-year-old Ronald Fitzgerald of that city, who was vaccinated on April 18 and came down with paralytic polio one week later.

Attorney Walter Dickie, Jr., representing the boy's parents, has obtained court permission for filing the suit. He contends that the child's polio came "as a result of negligence on the part of the defendants," identified as Cutter and four "John Doe's." Cutter and the insurance companies that have issued Cutter's product liability insurance policies will be defended by Wallace Sedgwick. Dickie has indicated that he'll ask for a jury trial, and the outlook is that it'll be at least eight months before the trial begins.

Persons familiar with food and drug laws say that while such laws are intended to protect the public and not the manufacturers, nevertheless Cutter can introduce as evidence the fact that its test results for the vaccine batches in question were approved by the U.S. Public Health Service.

* In this case, the National Foundation for Infantile Paralysis.



DULLES: Forces Administration's alien property disposal plan . . .

Out in the Open

The long-simmering Administration plan for disposal of seized German assets (including sale of General Aniline & Film Corp.) was finally submitted to Congress last week by State Secretary John Foster Dulles.

In brief, the bill would allow return to individual West German citizens of amounts up to \$10,000, as well as provide for return of trademarks and copyrights. It would also amend section 9A of the Trading with the Enemy Act, under which all alien property was seized. This move in turn would allow sale or liquidation of property involved in litigation, with the lawsuit continuing over the proceeds. Such a sale could take place only if the President made a determination that "the interest and the welfare of the United States so requires."

Although the Administration proposal contains no significant changes from earlier drafts (CW, Feb. 19, p. 14) the formal filing brings the alien property situation on Capitol Hill out in the open. It seems sure now that the Senate will hold hearings on the subject this year. But since several other bills have been introduced in the Senate, and because two committees in the House have jurisdiction over conflicting alien property legislation (CW, April 16, p. 15), final passage is not expected before next year at the earliest.

Root of the Difference: Basic division in both House and Senate is over

the return of such major alien assets as General Aniline—or an equivalent in cash.

The group now slated to first take up the disposal of alien property will be a special Senate Judiciary subcommittee, composed of Senators Olin Johnson (D., S.C.), John McClellan (D., Ark.), Price Daniel (D., Tex.), William Langer (R., N.D.) and Everett Dirksen (R., Ill.).

The situation in the House is complicated by the fact that the Administration's bill (H.R.6730) has been referred to the House Commerce Committee, headed by Rep. Percy Priest, while four resolutions that would give German owners—whether individuals or corporations—the entire money value of their vested properties have been referred to the House Foreign Affairs Committee. Moreover the House Commerce Committee, which has just completed work on the Harris Natural Gas bill (*see Newsletter*), has no immediate plans for hearings. "Our whole schedule is now off," says Chairman Priest. Several other matters are also ahead of alien property on the committee's agenda.

EXPANSION. . . .

Caustic-Chlorine: Hooker Chemicals, Ltd. (Vancouver, B. C.) will build a chlorine-caustic soda plant at North Vancouver. Preparation of the plant site starts immediately; production is expected to start in early 1957. Cost: \$11 million.

Glycerine: Dow Chemical Co.'s synthetic glycerine plant at Velasco, Tex., will be in operation late this summer. Rated annual capacity: 36 million lbs.

Expansion Expenditures: Du Pont Co. expects to spend \$135 million on new plants this year compared with \$120 million in 1954. No new financing to cover the additional cost will be necessary, however, because cash inflow from depreciation provisions is now running at about \$120 million/year.

Fatty Alcohols: Archer-Daniels-Midland is bringing its \$5-million fatty alcohols plant at Ashtabula, O., on-stream this week. Located on a 40-acre site on Lake Erie, the plant will have excellent shipping outlets when the new St. Lawrence Seaway opens. Metallic sodium is obtained from Na-

tional Distillers Products' plant just across the street; annual output of fatty alcohols is rated at 10,000 tons/year.

Natural Gas: Spokane Gas & Fuel Co. will launch a \$5-million rehabilitation and expansion program late next fall as a prelude to the arrival of natural gas—expected by July '56.

COMPANIES. . . .

St. Regis Paper Co. has acquired all the outstanding common stock of the Pollack Paper Corp. (Dallas, Tex.). Pollack, with sales of over \$33 million in 1954, is a leading manufacturer of waxed paper used in the baking industry, has plants in Texas, Alabama, Georgia and Ohio.

Versenes Inc. (Framingham, Mass.), purchased in Nov. '54 by Dow Chemical Co. and operated since then as a subsidiary, has been absorbed into the parent company. As a result, both Versenes' sales and development func-

tions will be transferred to Midland, Mich.; price revisions will be made on chelating compounds.

Vick Chemical Co. has purchased a 39-acre industrial site at Hatboro, Pa., for future manufacturing and laboratory expansion.

Walsenburg, Colo., has granted a 99-year lease to Cotarco, Inc., on 600 acres for the site of an \$11.5-million low-temperature coal carbonization plant.

Four hundred acres of the site will be used for stockpiling coal; the other 200 acres will be set aside for the Cotarco plant and possible later construction of chemical and fertilizer plants.

Coal stockpiling starts next fall; the plant plans to use about 8,520 tons daily.

Another company incorporation:

• Isenhower-Thomas Corp. (Lake City, S.C.), authorized capital stock, \$1,000.



Spelling Safety in the Sky

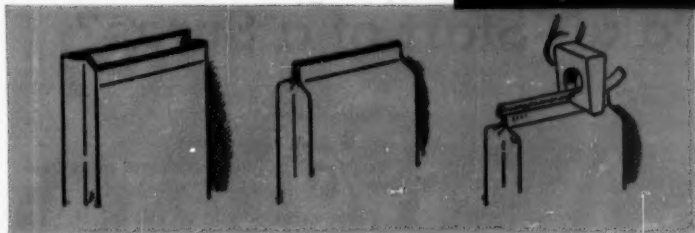
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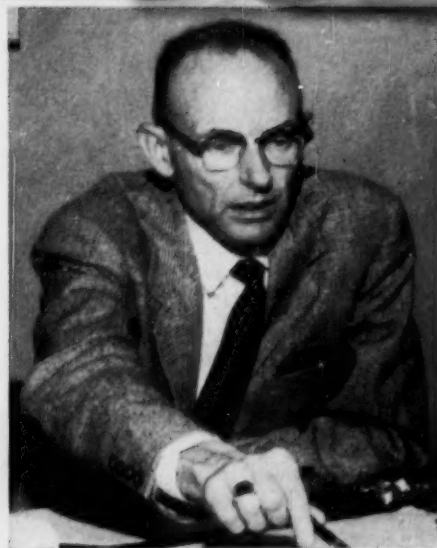
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GEORGE AND DON ELLIS: Father and son nucleus of an informal, closely knit management team.

Swing into Salt Cake—Start of a Surge?

Long-time soda ash, borax producer is turning this week into an entirely new field: the salt cake market.

Its aim: to supply the West, Deep South, and Gulf South pulp and detergent markets now dependent (in part) on German and Canadian imports.

Of the three big chemical flowers that bloom in California's desert—American Potash & Chemical Corp., Pacific Coast Borax, Ltd., and West End Chemical Co.—the latter was the last to sink its roots into the alkaline earth. But if current plans bear fruit, its growth in the immediate years ahead should bring it well up into contention with its neighboring competitors.

First new venture for the firm will be an invasion into the salt cake market. Utilizing what is described as "an entirely new process," the company will bring its first \$1.25-million, 150-ton/day salt cake production unit on-stream July 1; other units are due to follow soon.

Asked why West End has chosen salt cake as its field for immediate expansion, sales manager Don Ellis is forthright: "Salt cake historically has been a remarkably unstable business, based primarily on by-product production. Moreover, American Potash has been able in the past to supply the West Coast market easily—with some production to spare. But the recent growth of the pulp and detergent markets has changed the picture completely; there now seems to be a definite need for a second basic source." Therefore, instead of funneling back its salt cake as brine to Searles Lake, West End will henceforth make a

stab at peddling salt cake.

Admits George Ellis, West End president: "For the time being, with our first salt cake unit, we know we're going to be a small frog in a big puddle, but we think there is a big potential in the field. For example: West End expects to spread its market throughout the Deep South and Gulf South—areas that can't be supplied with by-product salt cake on a long-term basis, regardless of price. Moreover, there are no natural deposits in either area, and shipments from West-end, Calif., to the Southern pulp industry by rail are not exorbitantly costly (since rail rates are held down by water competition).

Other Possibilities Too: Although West End's research facilities are devoted primarily to process development, the company is not neglecting other possible production ventures. It's currently engaged (with Stauffer) in an active research program on boron, is conducting its own research activities on recovery of lithium from Searles brine.

In the latter case, the problem that West End researchers face is that of the basic process involved. Since the company evaporates no brine (as does American Potash), the cost of concentration is a stumbling block, and there's virtually no sizable quantity of

lithium recoverable from unconcentrated brine.

But company executives are sure they can solve the problem, anticipate a sales volume of \$7.5 million by 1959 (25% through sale of salt cake).*

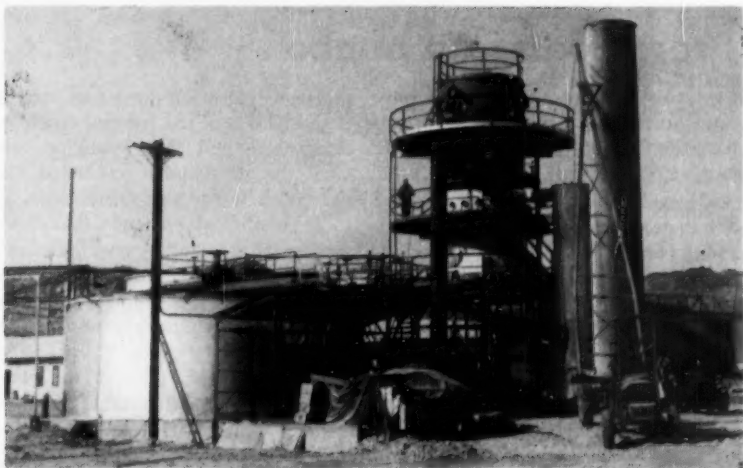
Solid Base to Remain: Despite its bright new expansion plans, West End Chemical won't slight its bread-and-butter production items—borax, soda ash, and hydrated lime.

Its borax production process is relatively simple: brine is carbonated to form sodium bicarbonate, which in turn is calcined to make soda ash and carbon dioxide (recycled for carbonation). After carbonation, the brine is mixed with additional brine (piped in from Searles Lake), cooled, seeded and agitated until a crop of borax is obtained.

About 80% of West End's borax output is sold domestically, somewhat the reverse of its competitors' pattern. Distributor for all the borax the company produces is Stauffer Chemical, a West End minority stockholder.

In soda ash, the current picture isn't quite so stable, but West End sales personnel are determined to make a fight for a share of the West Coast market. Company soda ash capacity is now 500 tons/day (a 30% expansion program having been completed in 1953), and of the three strictly West Coast producers (West End, American Potash, and Columbia Southern), West End is certainly the largest. But recently Westvaco, with its immense deposits at Green River, Wyo., has

* Sales in 1954, \$5.6 million.



WESTEND, CALIF.: Site of the company's soda ash, borax, and hydrated lime producing units now will house salt cake evaporators, too (see lower picture).

been burrowing into the Pacific Northwest on an equal freight basis with Southern California producers.

Admitting that Westvaco holds a distinct advantage in the Intermountain area, West End officials therefore openly admit they see a limit to the firm's future soda ash expansion.

The picture's about the same as far as sales of hydrated lime are concerned. West End currently produces lime for sale in southern California, acknowledges, however, that there's also a limit to its expansion along this line. This type of thinking no doubt is a considerable factor behind the swing into salt cake.

Closely Knit Team: Whichever way the company turns with its next big expansion move, it's likely to make the move quickly and with very little

advance notice. Reason: the company is run by a small, closely knit team. As President George Ellis puts it: "We've never been a company that spreads itself out . . . unnecessarily on executive overhead. We keep in touch with one another, and are thus quick on our feet."

Actually, the company has for this reason been known but slightly outside of the small niche it's carved for itself out of its soda ash customers. That's sure to change with the advent of salt cake production, but executives are determined to keep the company, as far as possible, in fairly trim shape. "Only evidence of change as far as we're concerned," says Don Ellis, "is that from now on we'll be traveling in a Cessna twin instead of a Cessna single."

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WHEN CONSTRUCTION HALTED: Offices of manganese firm that swung . . .

From Loan into Limbo

Critics of government-sponsored ventures in the chemical process field will be watching developments in U. S. District Court at Little Rock, Ark., next week when the Westmoreland Manganese lawsuit comes up before Judge Harry Lemley.

Background: Three years ago, with the Korean War still in a shooting stage, the government agreed to lend the Westmoreland Manganese Corp. \$3.8 million to build a plant near Cushman, Ark., to process ores from that vicinity for the federal stockpile. The plant was to be ready to go onstream April 7, 1953; but about four months before that deadline, Westmoreland reported that construction costs would exceed the original estimate by some \$500,000. The government then hired

private engineering groups to recheck the feasibility of the project; construction was halted that February; and later the government cancelled the contract and filed suit to foreclose.

Westmoreland contends that there was misrepresentation and bad faith on the part of officials of the two governmental units concerned, the Defense Materials Procurement Agency and its parent bureau, the General Services Administration. The company's officers feel that the U.S. should advance the other \$1 million of the loan principal and let the company raise whatever private capital is then needed to cover costs of remaining construction work.

Process in Dispute: One factor that began to worry the government about



AND SUDDEN STOPPAGE: In 64%-built plant, conveyor belts, washer unit.

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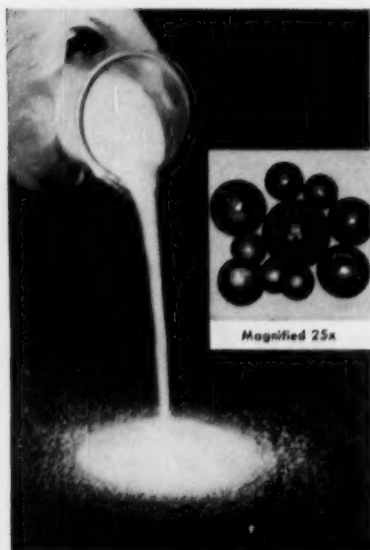
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BUSINESS & INDUSTRY.

this contract toward the end of 1952 was whether Arkansas' manganese reserve was large enough. Another anxiety: whether the washing and concentrating plant should be supplemented or supplanted by a chemical leaching plant to handle material finer than plus-35 mesh.

Westmoreland insists that these matters were discussed and decided before the original contract was signed, and that the government shouldn't have reconsidered these questions after the plant was nearly two-thirds built. Also, Westmoreland charges "fraud" in connection with a report made by Southwestern Engineering Co. of Los Angeles, which the government commissioned to study the project.

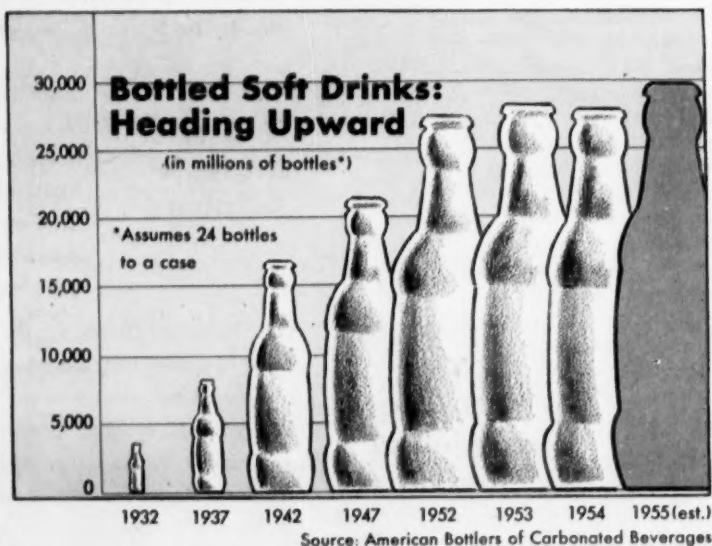
Southwestern recommended that the project be abandoned unless the plant could be "freed of obligations to past promoters," in which case Southwestern's president suggested it

might be possible to enlarge the scope of the project to provide for installation of a chemical leaching plant. Westmoreland asserts that Southwestern wanted to take the project over itself, and thus could not be in a position to make an impartial report.

William Stringham—who served as project manager for Westmoreland—says that DMPA led him to believe the government was satisfied with the company's performance right up to the last minute before cancellation. He said Westmoreland's initial cost estimates had been too conservative, but added that cost overruns are common occurrences in such construction.

Also involved: about a score of subcontractors, material men, suppliers and the U.S. Internal Revenue Service. Together, they have claims totaling \$472,623 against Westmoreland; and they're asking that their claims be satisfied first if the government succeeds in its foreclosure suit.

IMPACT



No Fizzle to Profits

WITH SUMMER just around the corner, chemical suppliers are contemplating with real interest this year's estimated jump in carbonated beverage consumption. Reason: the soft-drink industry offers wide play for marketing chemical products. Last year alone, bottled

sodas required an estimated 1.1 million tons of sugar, 170,000 lbs. of carbon dioxide gas, 15 million lbs. of phosphoric acid, 5 million lbs. of citric acid. Consumed in addition: 1.2 billion bottles (8 oz.), 28.8 billion metal crowns, and 500 million cardboard carry-home cases.

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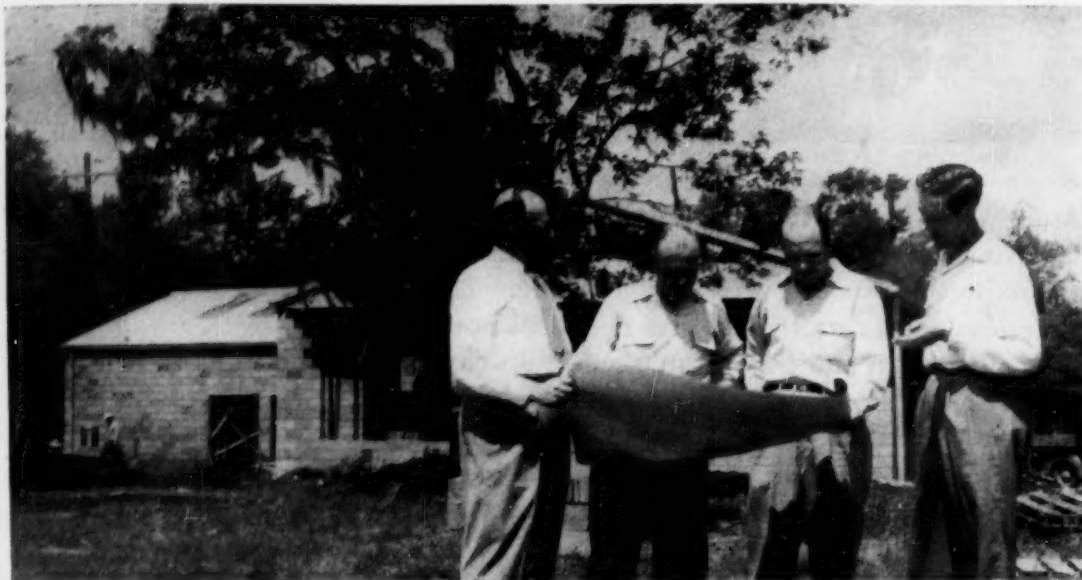
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From Any Angle, Sound Public Relations

WHEN THE NEW BOY SCOUT camp now being built on the San Bernard River near West Columbia, Tex., is completed, Dow Chemical's Texas Division will have chalked up another grand slam hit on the public relations scoreboard.

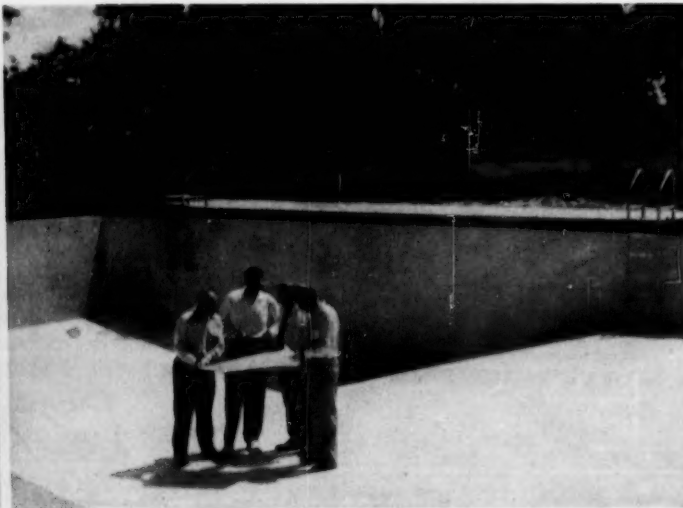
The camp, to cost over \$225,000, will be used by boy scouts of the entire Bay Area Council covering both Brazoria and Galveston Counties.

But Dow's contribution won't be remembered solely in terms of its dollar contribution. Over 275 company employees are engaged in active scouting activities in

Brazoria County alone, with positions ranging from unit committeemen to council vice-presidents.*

Encouraging personnel support, the company gives all scoutmasters up to four days' time off the job each year to take their units to scout camp. For other scouting activities, equally generous time-off-the-job arrangements are made.

* In upper picture: H. B. Jones, operator in the styrene plant and past president of the Scouts' Camping and Activities Committee; W. J. Rave, magnesium production manager and national representative of the Bay Area Council Camping Committee; A. F. Shorkey, general superintendent of caustic and vice-president of the Council Training Committee; and W. H. Martin, Dow's superintendent of transportation and district scout chairman.



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CAPRYLOYL CHLORIDE
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METHYL PHENYLACETATE
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PHENYLACETIC ACID
PHENYLACETONE
beta-PHENYLETHYLAMINE
PHENYLMERCAPTOACETIC ACID
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PLOTTERS FOR INDUSTRIAL PEACE*: In Canada, their labor-management production committees prove to be . . .

BUSINESS & INDUSTRY



TEAM TO ENGENDER TEAMWORK**: At one chemical

Intraplant Tie that Binds

How does Canadian industry—struggling to hold competitive position in world trade—keep prodding productivity upward, yet hold labor disputes down?

One handy device for these managerial feats: joint labor-management committees that work out operational problems as they arise.

It's axiomatic that labor gets restless when management asks for more output per man per day; and Canadian industry—facing direct and brisk competition from its U.S. counterpart—has had to keep pressing persistently for higher productivity, particularly since the end of the Korean War boom. Yet percent of scheduled worktime lost due to strikes has been about one-third less in Canadian manufacturing than in the U.S.

Among reasons for this industrial anomaly: increasing use by Canadian companies of labor-management production committees, a teamwork device (abbreviated LMPC) that has turned out to be a stout cord binding executives and employees together in their common interests.

So important are LMPC's considered to be—for industry and thus for the entire nation—that Canada's federal government has a special agency to assist these intraplant committees in their formation and functioning. And up to this week, there are more than 1,000 such committees in Canada, in-

cluding 32 in chemical process plants.

Closing a Gap: Typical of LMPC's in the chemical process industries: the 13-member "Operational Committee" that has been in action for the past 11 years at the Walkerville, Ont., plant of John Wyeth & Brother (Canada) Ltd., oldest pharmaceutical house in the country. Its responsibilities include advising management on employee education and training, safety, good housekeeping, production efficiency, and suggestion programs.

Wyeth employees are members of Local 368, Oil, Chemical & Atomic Workers Union (CIO); but they figure that there's no conflict between the work of their union committees and that of the Operational Committee. Says Local 368 President Raymond Meredith: "Employee-management groups today are a vital necessity to business. There is a gap between labor and management—despite the signed working agreement—that requires at-

tention; and at Wyeth this is handled by what we choose to call our Operational Committee."

An accolade for the committee's "fine record of accomplishment" comes from company President Gordon Gray, who says that the group's work has been "strikingly apparent in the warmth of ever-improving morale and human relations" within the organization. Also, he points out that an expensive addition to the present plant—now under construction—contains many innovations that are the result of employee suggestions drummed up by the committee.

Inspections, Magazines, Parties: The Wyeth committee meets twice a month—once during working hours, once after a dinner for members. A new committee is chosen each year, but the retiring committee members attend the new group's first two meetings each year to promote continuity of projects already started or proposed.

The committee carries on the regular suggestion system and helps judge entries; it also sponsors an occasional "Why don't we—?" program in which \$1 is awarded for each submission. Another heavy item among the committee's chores: safety inspections, conducted each week by employees picked by the committee. The inspectors make a report to the com-

* Within Canada's Dept. of Labour, executive P. E. Salter (seated) and assistants J. S. Best and W. R. Channon of the Labour-Management Cooperation Service.

** Operational committee at pharmaceutical plant of John Wyeth & Bro. (Walkerville, Ont.). Seated fourth and fifth from left: company President Gordon Gray, local union President Raymond Meredith.



FRANK WANDERBROGH, WINBOR process plant, joint committee's current line-up.

pany's safety director, and also turn in written requests for safety moves.

In a lighter vein—but still deemed important in morale and human relations—are such committee projects as sports contests, card parties, Christmas parties, a "family night" program, the annual picnic for employees, and exhibits of employees' hobbies. The committee arranges occupational lectures and maintains a magazine rack in the company's canteen.

Of Wartime Origin: Smoothing out labor relations for the sake of defense production during World War II was what the Canadian government had in mind when it entered this field back in 1943. The Labour-Management Cooperation Service was established in its present form in 1947, and is now under the direction of M. M. MacLean, assistant deputy minister of labor, and P. E. Salter, executive assistant.

Management and labor alike are fully behind the plan, so there's never any trouble about getting Parliament to approve the agency's annual budget of about \$155,000. The program has testimonials from the Canadian Manufacturers' Assn. and from both of Canada's large labor federations.

And plaudits from industrialists—"increasing efficiency," "improving product quality," "reducing costs"—indicate that this plan is going to be given even more of a workout as international competition becomes more pressing.

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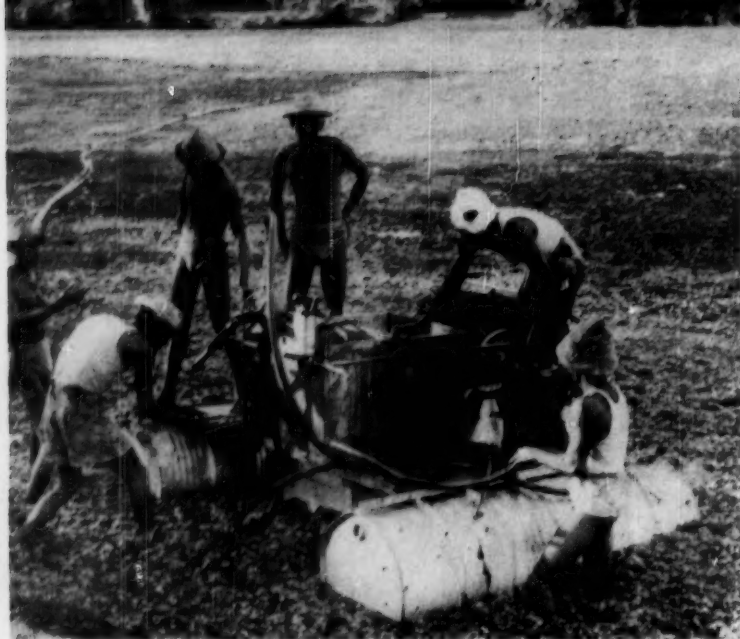
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TITTAWELA TANK: Typical of the *Salvinia* infestation threatening Ceylon.

Floating Menace: Still a Problem

The government of Ceylon this week is faced with a serious problem—what to do to eradicate *Salvinia*, a rapidly spreading water weed, which is seriously threatening the country's agriculture and public health. *Salvinia* is resistant to most herbicides, and removal of the weed by hand is impracticable owing to the high labor costs involved.

Brought into Ceylon for botanical studies in 1939, small portions of the weed were discarded after study, quickly formed new plants in the waterways. Within 13 years, its rate of growth has been so rapid that *Salvinia* has spread over at least 25,000 acres, choking up paddy fields, irrigation canals, and reservoirs, causing stagnation of water and forming breeding grounds for insects.

A free-floating fern with no true roots, mature *Salvinia* is a mass of hairy leaves on fragile stems. Young leaves and buds are easily detached from the main plants, rapidly grow to form dense areas of foliage. In other parts of the world where it grows, *Salvinia* is presumed to be kept in control by natural competition of other weeds—but such is not the case in Ceylon.

One Possible Solution: Faced with the problem of wiping out the menace, the Ceylon Ministry of Agriculture has been working with Shell Petroleum Ltd. to develop a herbicide, for-

mulated with petroleum,* to clear large areas from infestation. But, although the remedy is reported to be efficacious, it's costly too. Recommended usage is 10 gallons of the weedkiller diluted with 190 gallons of water—applied at the rate of 200 gallons (of the spray liquid) per acre. Moreover, almost 50% of the treated area requires a second spraying—2-3 weeks after the first application.

Thus, Ceylon agriculture experts, although pleased with the possibility of a method of controlling the *Salvinia* menace, aren't convinced that the country will be able (financially) to carry the cost for long. Hence, they're still open (and looking) for a substitute method of eradicating *Salvinia*.

Not More, But Different

More money for titanium research and less money for titanium production—that's the recommendation of a Senate subcommittee report, issued after secret hearings in March and April.

The report—not new in content but adding weight to previous charges of an imbalance in the government's titanium program—comes from Senators Stuart Symington (D., Mo.), chairman, and James Duff (R., Pa.), who comprise the Subcommittee on

* Pentachlorophenol plus wetting agents in an oil emulsion.

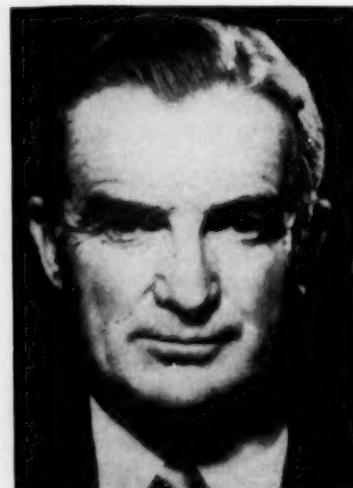
B & I.

National Stockpile and Naval Petroleum Resources under the Armed Services Committee. Their chief complaint: that the government is guaranteeing prohibitive production costs while production is running far ahead of consumption.

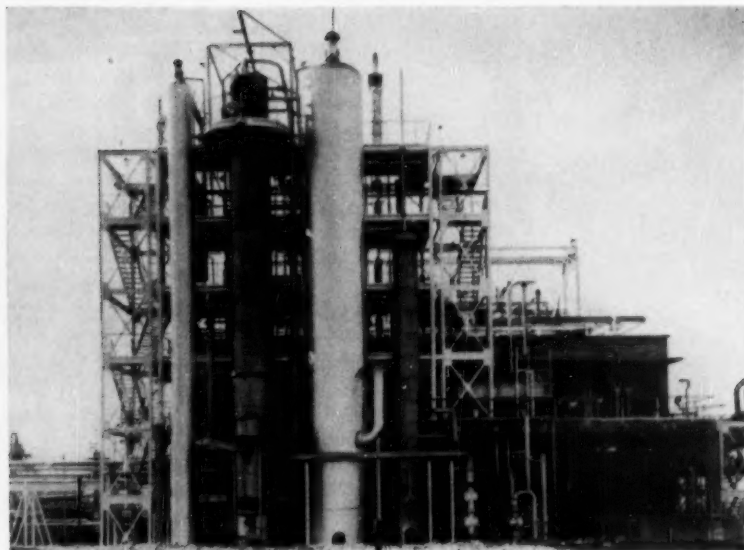
Current production contracts, they say, call for 22,500 tons of titanium annually, (although 1955 output will be only 10,000 tons). Moreover, if a proposed contract with Du Pont is signed by GSA, contracts for production will total 30,000 tons. In striking contrast, consumption today is running around 1,700 tons annually—most of it going into aircraft alloys. Result: unused metal is piling up in warehouses of both producers and the government.

Special Reference: The subcommittee specifically criticizes the anticipated Du Pont contract whereby the government is to finance the building, guarantee purchase of all titanium produced, and waive rights to production methods. Also scored: provisions that leave Du Pont free to fix a price without adequate government checks on production costs.

Senators Symington and Duff also criticize what they call "unnecessary security classification" on titanium data, claim that insufficient information-sharing on research by the various private producers is holding back improvement of the product. The subcommittee further charges that no coordinate program or "direction" has yet been established.



SYMINGTON: Wants balance in the government's titanium program.



ETHYLENE OXIDE: By direct oxidation, by Naphtachemie, at Lavera, France.

FOREIGN.

Petrochemical/Belgium: Pattern for a section of the new petrochemical units the Societe Chimique des Derives du Petrole plans to build at Antwerp, Belgium, is Naphtachemie's ethylene oxide plant at Lavera, France. Built by Scientific Design Co. (New York), the French plant (put in operation in 1953) produces ethylene oxide by direct oxidation of ethylene, does not require use of chlorine.

Estimated date of completion of the Antwerp plant: mid-1956.

Caustic Soda/India: Dhrangadhra Chemical Works Ltd. will spend an additional \$2.1 million to set up a proposed soda ash-caustic soda plant in Tuticorin, Madras state. With an estimated output of 100 tons/day of soda ash and 60 tons of caustic, the company will become India's second largest caustic soda producer. (Tata Chemicals is the largest producer, turns out an estimated 56,000 tons/year of soda ash.)

Even this additional expansion, however, fails to meet Indian demand (estimated at 115,000 tons/year of soda ash today, 300,000 tons by 1960). Therefore it's highly conceivable that the Indian government will decide to enter the caustic field soon.

European Chemical Congress: A new method of producing calcium carbide through the use of oxygen was de-

scribed last week at the Congress of the European Federation for Chemical Engineering in Frankfurt. Carl Wurster, managing director of Badische Anilin- & Soda-Fabrik, claims that its use in place of the presently used electrothermic process saves heavy energy costs in production, says further that Badische Anilin has made large test runs and has found the process completely successful.

Another Congress speaker, Gustav Ehrhart of Farbwerke Hoechst, discussed development of a new pharmaceutical product designed to fight tropical diseases in animals. He maintains that the remedy (to be marketed under the tradename Berenil) has been effectively tested by a German expedition that spent more than a year in Africa. Wide use of such a product would make possible colonization of large sections of Africa now fever-infected, where entire herds of cattle have been annihilated by diseases.

Abrasives/India: A new Indo-British-U.S. project (with authorized capital of \$1.47 million) will soon start production of bonded and coated abrasives at Madras, India.

The company, known as Carborundum Universal Ltd., will be run by a managing board headed by Sir Ramaswami Mudaliar, chairman of India's Investment and Credit Corp. Among the other directors: H. K. Clark, president, The Carborundum Corp. (Niagara Falls, N.Y.).

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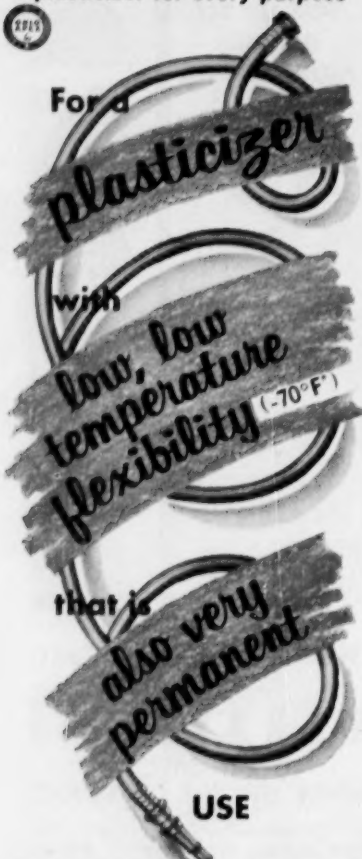
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BUSINESS & INDUSTRY



JUDGE MINER: For drug-switching pharmacists, fines and injunctions.

LEGAL

Rap for Substitution: Judge Julius Miner of Cook County Circuit Court at Chicago has nailed down permanent decrees against four Chicago pharmacies that were found to have substituted other drugs in filling prescriptions calling for Nembutal and other products of Abbott Laboratories. Judgments called for payment of damages to Abbott and permanent injunctions forbidding further acts of substitution. This marked another stage of Abbott's nationwide antisubstitution crackdown.

Independence on Shortening: Procter & Gamble—which only a year ago was embroiled in two law suits over patents on hard-into-shortening processes—now appears to have attained separate and equal status in that field. When those two suits were settled out of court earlier this year (CW, Feb. 5, p. 28), P&G was cast in a licensee's role; but as of this week, P&G is using its own processes (patents Nos. 2,442,531 and 2,442,532 issued several years ago; other patents pending). Swift—owner of patents 2,625,478 through 2,625,487—has formally recognized that its patents do not cover the P&G process; and Armour—first with a chemical method of modifying lard's crystal structure to improve its frying and baking properties—continues to use a process based on its patents, particularly patent No. 2,571,315.

Stockholders Sue: In federal district court at Denver, the 57 minority stockholders of Climax Uranium Co. are bringing suit in an effort to get the majority stockholder—Climax Molybdenum Co.—to give up 6,950 shares of CU's common. Their complaint alleges that although the articles of incorporation specify that Climax Molybdenum is to hold no more than 75% of the uranium company's stock, it is actually holding 84%.

Public and Private: Legal actions against alleged sources of pollution are being pushed this week by both public and private parties:

- At Oakland, Calif., Pacific Gas & Electric Co. is asking for damages and an injunction against Best Fertilizer Co., charging that corrosive substances from Best's stacks have damaged power lines, transformers.

- At Niagara Falls, N.Y., city officials are investigating an "odor nuisance" near the Pathfinder Chemical plant, are hinting that court action may follow.

LABOR

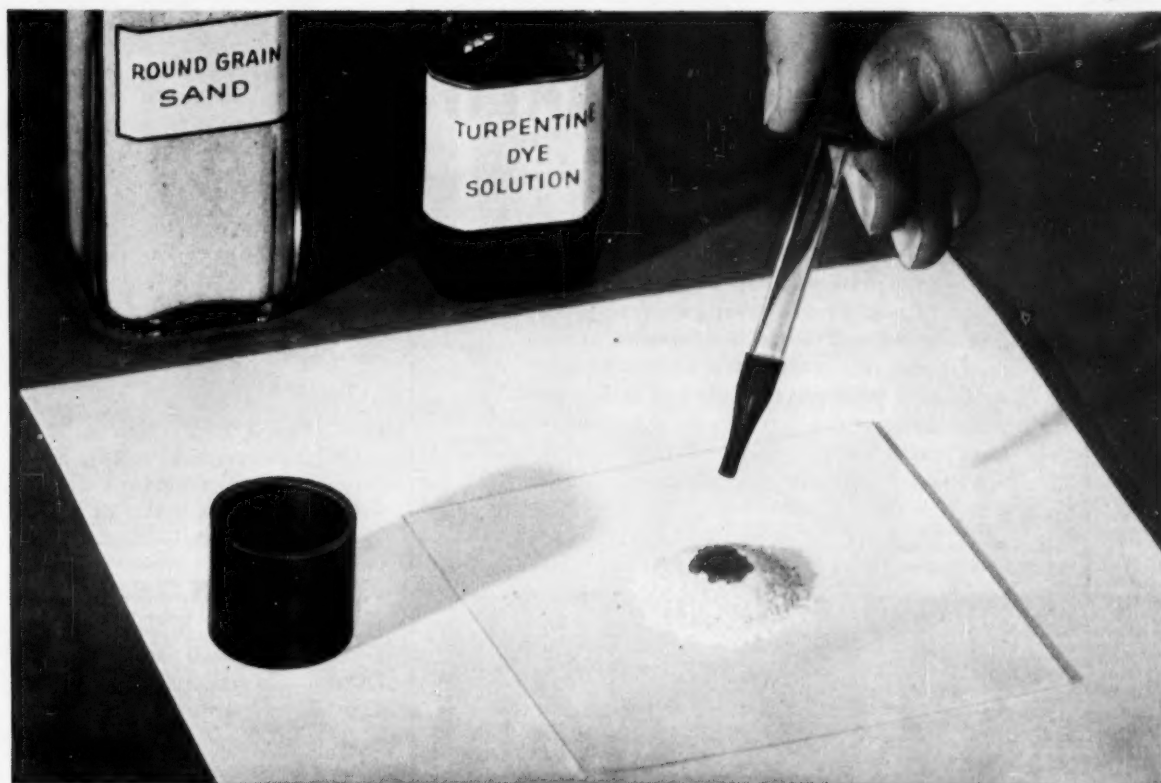
Nickel-to-Dime Increases: Latest chemical wage increases are in the "Woolworth" vicinity:

- General Aniline & Film has granted a $6\frac{1}{2}\%$ hour wage rise to about 600 employees—represented by International Chemical Workers Union (AFL)—at Rensselaer, N.Y. The new contract also provides an eighth paid holiday and other fringe benefits.

- Dow's Texas Division and the International Brotherhood of Teamsters (AFL) have agreed on a 10% hour across-the-board increase for 312 employees at Freeport, Tex. Hourly rates for these workers now range from \$1.80 for truck helpers to \$2.45 for crew leaders.

- At Niagara Falls, N.Y., pay increases of from 5% to 7% hour are forthcoming for employees of Union Carbide's Carbide and Carbon Chemicals Co. division. The bargaining unit is represented by Oil, Chemical & Atomic Workers Union (CIO).

Joint Bargaining: The various locals of International Chemical Workers Union (AFL) in the Florida phosphate field seem to have embarked on a campaign for a uniform wage plan at all major phosphate plants here. The



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In the paper industry, Methocel coatings are utilized as parting agents to separate cartons from solidified products, or as sizing to control ink penetration of boxboard stock and paraffin penetration of paper stock.

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The coated paper, bearing the sand, is moved at specified intervals to examine the sheet below for staining, as specified in test method T454m-44 (Technical Association of the Pulp and Paper Industry).

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CORROSIVE MATERIALS

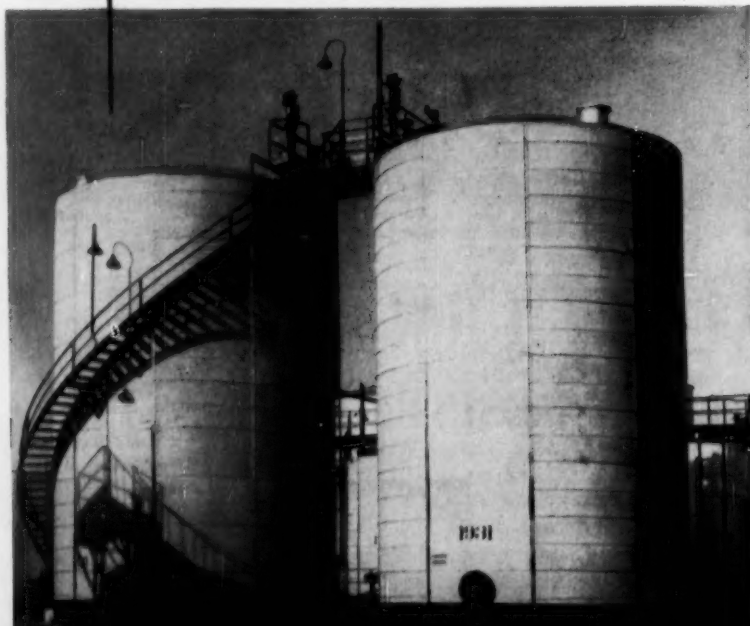
aren't really hard to store . . .

... it just takes the proper storage facilities.

When you're faced with special storage problems, Chicago Bridge & Iron Company will design, fabricate and erect the facilities necessary to meet your specific requirements. Our plants are fully equipped to build tanks or vessels of carbon steel, stainless steel or non-corrosive metal and carbon steel lined or clad with corrosion resistant materials.

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strike that started last fortnight (CW Newsletter, June 11) was "official" against only two companies; local unions explained to the other four firms that the employees were engaged in "continuous meetings."

It was expected that lack of raw materials would soon force the closing of two other processors, F. S. Royster Guano Co. and U.S. Phosphoric Co.; and it was reported that a strike may be in the offing for Swift & Co.'s plant unless there's agreement by this week in wage reopener negotiations. This would leave only one big producer in operation: Davison Chemical Co. Division of W. R. Grace & Co.

Phosphate companies' officers have denied a labor spokesman's charge that the companies work together in planning bargaining tactics.

KEY CHANGES. . .

Philip M. Dinkins, to vice-president, operations, Dyestuff and Chemical Division, General Aniline and Film Corp. (New York).

Tom R. Ragland, to vice-president, Union Carbide International Co. (New York).

William H. Schuette, to general manager, Midland Division, Dow Chemical Co. (Midland, Mich.).

Fred D. Fagg, Jr., to director, Union Oil Company of California (Los Angeles, Calif.).

Lester Dean, and **Joseph Bloom**, to directors, Lithium Corp. of America, Inc. (Minneapolis, Minn.).

William Naden, to executive vice-president, Esso Standard Oil Co. (New York).

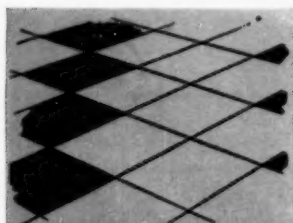
Herbert Kay, to manager, new chemicals development, Chemical Division, Climax Molybdenum Co. (New York).

F. M. Norton, to assistant vice-president, and **R. A. Lyon**, to production manager, Semet-Solvay Petrochemical Division, Allied Chemical & Dye Corp. (New York).

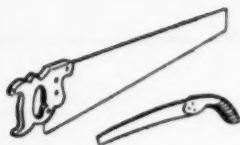
Joseph H. Connell, to director, Reynolds Metals Co. (Richmond, Va.).

Preston S. Parish, to director, The Upjohn Co. (Kalamazoo, Mich.).

W. H. Woods, to general sales manager, Titanium Pigment Corp. (New York).



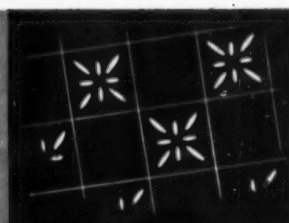
FLOOR COVERINGS



STEEL



BRASS



CERAMIC TILE



ZINC



TEXTILES



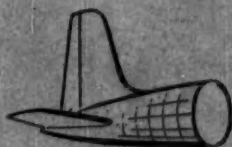
HARD RUBBER



STAINLESS STEEL



COPPER



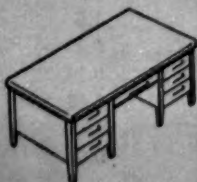
ALUMINUM



PHOSPHATIZED STEEL



GLASS



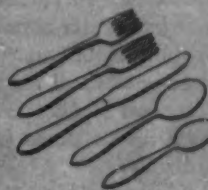
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Where He Stands—

*The Position of the Small Manufacturer in the Chemical Industry**

Census Bureau Industry Classification	Maximum Number of Employees in Small Establishments	% of Small Establishments in Industry	% of Manufacturing Done By Small Establishments	% Total Business Done By Industry
Alkalis and chlorine	900	38.8	6.35	2.1
Inorganic chemicals n.e.c.	250	73.5	13.0	6.4
Cyclic (coal tar) crudes	75	53.8	7.35	0.32
Plastic materials	500	75.5	11.3	3.8
Synthetic rubber	350	25.0	—	1.8
Synthetic fibers	2300	59.0	7.1	8.35
Explosives	200	74.2	14.8	1.4
Organic chemicals n.e.c.	1000	80.4	9.5	13.3
Biological products	100	80.0	38.5	0.37
Botanical products	100	77.0	12.0	0.17
Medicinal chemicals	900	82.8	10.4	2.1
Pharmaceutical preparations	300	96.0	28.0	11.3
Soap and glycerine	500	92.0	10.7	8.5
Cleaning and polishing preparations	100	96.2	46.5	2.5
Sulfonated oils and assists	50	91.0	54.5	0.38
Paints and varnishes	100	90.5	31.0	8.7
Inorganic color pigments	225	73.8	10.0	1.8
Whiting and fillers	50	89.3	49.7	0.17
Hardwood distillation	175	68.2	14.7	0.14
Softwood distillation	325	82.4	13.3	0.86
Gum naval stores (steam- distilled)	50	92.0	64.0	0.05
Natural tanning and dyeing materials	75	62.5	28.8	0.13
Fertilizers	125	60.5	9.3	2.4
Fertilizers (mixing only)	50	83.0	32.9	1.1
Cottonseed oil mills	75	25.0	25.8	2.0
Linseed oil mills	100	25.0	5.0	0.8
Soybean oil mills	100	78.0	20.4	2.0
Vegetable oil mills n.e.c.	100	67.0	14.7	1.5
Marine animal oils	100	88.0	59.0	0.3
Grease and tallow	75	92.0	29.2	2.2
Fatty acids	125	50.0	7.4	0.3
Animals oils n.e.c.	50	93.0	80.0	0.03
Printing ink	75	88.0	25.4	1.0
Essential oils	100	87.5	30.8	0.27
Toilet preparations	225	94.0	24.4	4.2
Glue and gelatin	175	75.0	14.1	0.9
Carbon black	100	23.0	3.3	0.8
Compressed and liquefied gases	50	74.0	6.2	1.3
Insecticides and fungicides	100	86.0	38.6	0.56
Salt	175	60.0	9.2	0.47
Chemical products n.e.c.	75	92.0	37.2	0.36

*This table is derived from the raw, (as-yet-unpublished) data of the Bureau of the Census, collected under contract with the Office of Small Business. At present, the material is officially tabbed "Selected Statistics for Establishments (Based on 1947 Census of Manufacturers) Classified as to Company Size, Number of Employees, and Value Added by Manufacture."

by Nathan D. Froot

The Small Manufacturer in the Chemical Industry: His Position, Problems and Future

Somewhat harassed but still going strong, the small chemical manufacturer speaks up.

No Polyanna, he knows he's battling for his economic existence, but he believes he can hold his own—and be the stronger for it.

Who is he? How does he operate? What are his problems? How is he solving them? What is his position in the chemical industries?

Here are answers, and an actual case study that focuses on the details of one individual small manufacturing operation.

Once fat and prosperous, the small business man has gone on a diet of decreased profit margins and increased competition. To survive in this day of billion-dollar sales and million-dollar advertising campaigns, he has had to shed his excess poundage in favor of fleetness and maneuverability.

But if the small manufacturer is no longer predominant in many areas of American industry, at least he is not yet an anomaly. In the chemical industry, he still accounts for almost 20% of total business volume. Meantime, he has turned into a trim and wiry competitor with a few more wrinkles but a much sounder constitution—on the whole, optimistic, and determined not to sell his role short

(see table: Position of the Small Manufacturer). But for a true measure of his fitness, it is necessary to look beyond the bare figures:

- In the heavy-chemical field (ammonia, sulfur, alkalis, acids, et al) where he is bucking heavy capital investment, large volume, high break-even point, and a relatively stable demand, the small manufacturer is fighting a losing battle. Survival in this area for the small independent is sporadic and very limited.

- On the other hand, in the specialties field where capital investment is generally low and processing techniques are comparatively simple, there is no question of his survival. The small manufacturer not only

exists in this area, but he prospers as well.

- It is in the intermediate chemical industries that the continued existence of the small manufacturer is moot. Only here, where the processor takes basic raw materials and turns them into chemicals used in the manufacture of other chemicals, does the small manufacturer have to bring all his resources to bear upon survival—for he can survive, and if he does, he can prosper.

Muddled Middle: In the time since the turn of the century, the U.S. chemical industry has grown from \$1 billion in annual sales to \$20 billion, from a fledgling almost totally dependent upon Europe to a recognized world leader. Today it is the fifth largest U.S. manufacturing industry in sales, the fourth largest in total assets.

In large measure responsible for this rapid growth, the small manufacturer of chemical intermediates existed happily as an indispensable tie between the raw-material producer and the end-product maker. Sheltered from the heavy capital investment of the former and the fervid competition among the latter, he prospered.

But if the small chemical manufacturer found the middle ground free

from the hardships of the extremes in the beginning, he is now finding that it breeds a brand of problems all its own—problems that make his survival at best a touch-and-go proposition.

The Search: Today, for instance, the accent is on new chemicals (*CW Report*, Sept. 25, '54). Last year, the chemical industry introduced more than 500 products, synthesized another 10,000 new compounds in its research laboratories. Individually, some of the larger chemical companies introduce over 20 commercial products a year.

Staying abreast of research developments, particularly in those areas seeded with large-size competitors, has become a major problem for the small intermediates manufacturer. Winded trying to match strides with the leaders, most of them rely primarily on imitation and flexibility.

Still, a real and growing effort is being made by many small firms to institute and expand their own research facilities. But even where a company has its own research setup, management realizes it cannot keep

pace with the facilities and developments of the larger firms in its field. In an attempt to narrow this gap, the head of the small firm makes it his special province to keep in personal touch with all developments in his field.

With the discovery of a promising project, the small manufacturer finds himself faced with another major problem: how to finance the venture without giving up some of the ownership to raise capital. About half of the firms covered in this survey are still individually or family-owned corporations whose owners are reluctant to cede control. In those cases where some ownership has been relinquished (even while it was not carried to the

point of losing effective control), management complains of minority interference, finds it a constant source of irritation.

For normal business operations, of course, most of the small manufacturing firms are able to obtain money from local banks at reasonable (though not low) rates.

On the whole, production problems, while related more to the manufacturer's specific field, are of the same general nature as those in research. For most small firms, the big fear is obsolescence. Investment in equipment, though comparatively less than for the maker of heavy chemicals, still represents a sizable allotment for the small manufacturer of intermediates.

Backstage Bias

In gathering material for this report, the author personally interviewed a number of small chemical manufacturers. These men represented companies engaged in the manufacture of botanicals, inorganic salts, insecticides, medicinals, solvents, specialty organic chemicals, and surface-active agents.

In all instances, the person interviewed was either the owner of the company or one who held a position equivalent to that of general manager and thus was well aware of overall policies and problems. At the same time, he was too close to the subject of general management to give the author an objective picture in this one area.

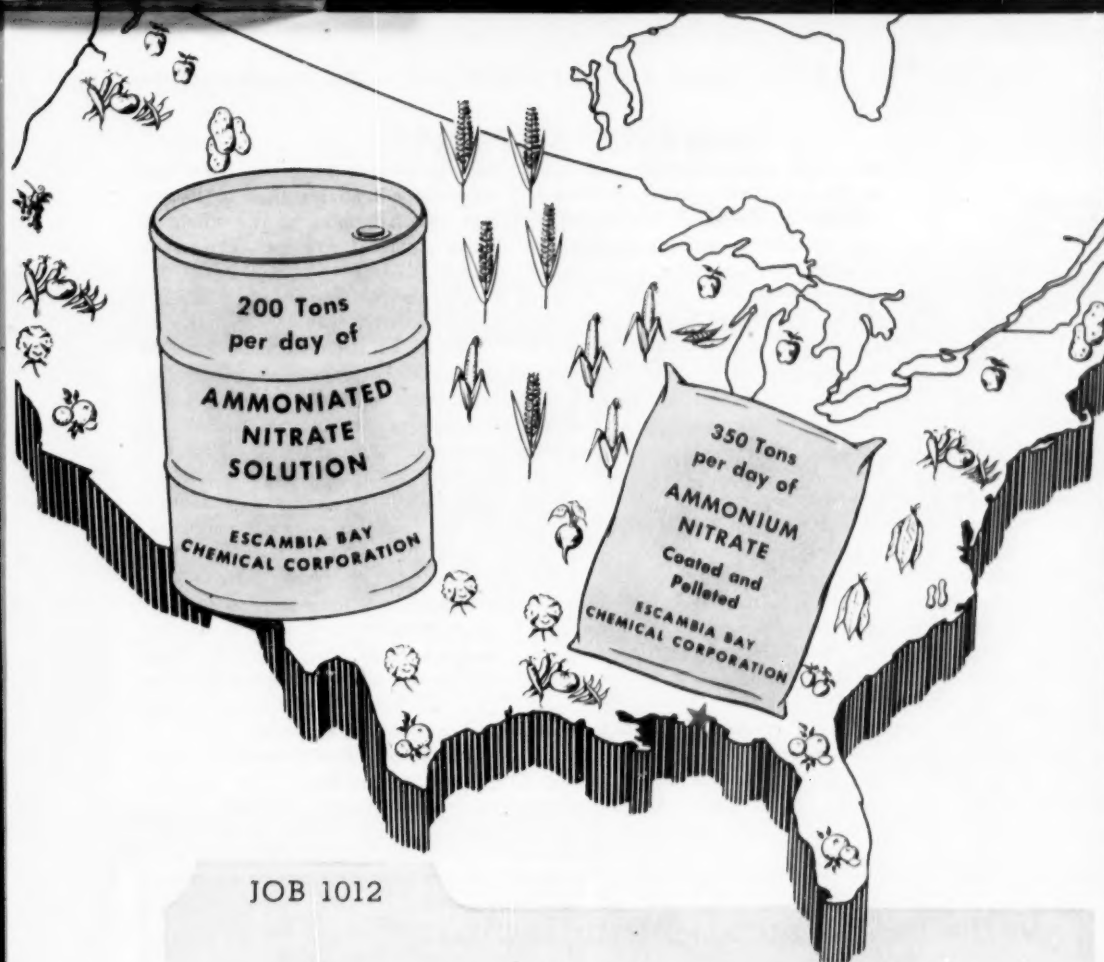


Meet the Author

NATHAN "JERRY" FROOT had his chance to tag along with "big business." He's not sure just where it would have led; but what's more important, says he, is that he never stops to wonder.

After graduating from New York University with a bachelor's degree in chemistry, he went to work for General Electric Co.'s Chemical Dept. in 1947. He left GE in 1949, took a job with Pesticide Advisory Service, now helps administer the service's technical sales. Meantime, in 1952, he took a hand in the organization of Propel Chemicals, Inc., where, as vice-president, he presently heads up research and sales.

The hours not taken by his two jobs, he puts to use finishing work on a graduate degree he hopes to get this summer from his alma mater.



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And where the heavy chemical maker operates under at least a fairly stable demand, the intermediates manufacturer faces a fast-paced introduction of new or substitute products and processes.

As a result, the small manufacturer generally exercises extreme care when considering expenditures for manufacturing facilities. Most of them insist that any major piece of equipment be adaptable to at least two different products or processes. Innovations and improvements of the homemade variety are encouraged by the small firm to overcome the large competitor's

advantage in manufacturing efficiency. At the same time, several small manufacturers speculate (cautiously) on raw materials or look for surplus sales to offset the purchasing advantage of the bigger firms.

Keeping Loose: But it is not until the small manufacturer of intermediates goes to market with his output that he fully feels the press of bigness. It is in the field of sales that, for survival, he must call up all his dexterity:

- To meet the lower prices of large production runs, he offers rapid service, products tailored to the customer's exact specifications.
- Where the large company promotes sales through heavy advertising, the small firm stresses personal contact and service.
- When his accounts turn into captive customers through competitive mergers, he relies on his flexibility, switches to a new product or a new customer. But only one of the

firms covered in this survey has a man who devotes all his time to finding new uses for products. The others, to build sufficient volume, depend on chance.

The alternative, expanding markets geographically, requires either the expense of an enlarged sales force or the use of manufacturers' representatives. Most small firms choose manufacturers' representatives, believe this approach is preferable to adding a semi-permanent additional sales force, even though sales effort is less forceful and control of sales less complete.

Perhaps the most hazardous contingency for the small manufacturer is a sales war between two or more large competitors. Caught in this no-man's land, he often has little choice but to go under. At present rather rare, this kind of war was fairly common until about five years ago.

Light and Dark: Despite all these pitfalls, the small chemical manufacturer is, on the whole, optimistic in

Who Is the Small Manufacturer?

Today, there are almost as many different criteria for determining which firms are or are not small as there are groups that wish to determine it. Over the years, there have been many attempts—half-hearted and serious—at classification; most of them established a fixed number of employees as the criteria, automatically considered any company having fewer than the arbitrary number of employees as small.

Long bothered by this problem of establishing a satisfactory and widely acceptable definition of what constitutes small business, the government also looked into the matter. After a comprehensive investigation, Office of Small Business's James Mills found the matter of definition was complicated, that within quite broad limits, the number of employees a firm might have and still be considered small could not be constant for all industries.*

How Big? Based on his analysis of the size of manufacturing establishments as reported in the 1947 Census of Manufacturers, Mills defined all firms having less than 50 employees as absolutely small, and those having more than 2,500 employees as absolutely large. But the difficulties arise, concluded Mills, in sorting out those in between. In regard to these, he decided that the small manufacturing establishment is one whose problems are

- (a) common to all firms of absolute small size, and
- (b) due to its position in the industry with reference to large businesses.

In light of this definition, Mills examined each of the 452 Census Bureau industries, established the maximum number of employees any company in the industry could have and still be considered small. (This number is indicated for the different chemical industries in the third column of the table, Position of the Small Manufacturer.)

No simple definition, of course, can cover perfectly all the various industries and subindustries. Ideally, were it possible, a definition of what constitutes a small manufacturer should consider—in addition to number of employees—such factors as financial strength, investment, amount of equipment, ratio of output to employees. (Too, some provision should be made for the medium-size manufacturer who occupies a significant position, particularly in the chemical industry.)

But Mills' definition is among the best available; it is one of the few that make any allowance for the peculiarities of individual industries or that permit further statistical derivations from available data.

Hence, it is this definition of the small manufacturer that is used in this report.

* "A Proposed System for Classifying Manufacturing Concerns by Size," by James I. Mills, U.S. Dept. of Commerce, June, 1951.

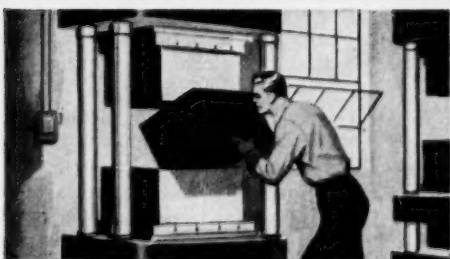
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regard to the future. He foresees growth at least comparable to that of the past, generally believes that the possibilities are unlimited. Each new major development or new series of products in the chemical field, for example, starts an economic chain reaction, opens up many avenues to commercial development. And as these avenues open up, it is the small firms that first exploit them. Many of them, of course, will drop out later when the larger firms start moving in; but a few, of superior management or technical position, will remain and continue to operate successfully.

Too, there are certain areas in the chemical field that are naturally better served by the small rather than by the large chemical manufacturer—where materials or markets are widely dispersed and transportation is costly; where special skills or manufacturing techniques are required and total volume is small.

Usually, the small firm also enjoys an advantage in being the sole outlet for the owner's individual energy. The resultant speed and flexibility are important, permit the small firm to respond to an opportunity almost as soon as it presents itself. At the same time, ingenuity is demanded and can be used to a greater degree in the small firm.

Yet, a few of the small manufacturers see their position becoming more difficult, feel that the competitive situation and the rush of new developments will leave many of them by the wayside. But most of them believe it will happen to the next fellow, for some special reason or other, feel that their own firms will actually fare better in the future.

In many instances, this optimism undoubtedly reflects actual preparation for future contingencies, for several small manufacturers concede that the best will have to get better to survive. But awaiting those who make the grade, they believe, is a greater prosperity than ever before.



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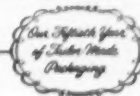
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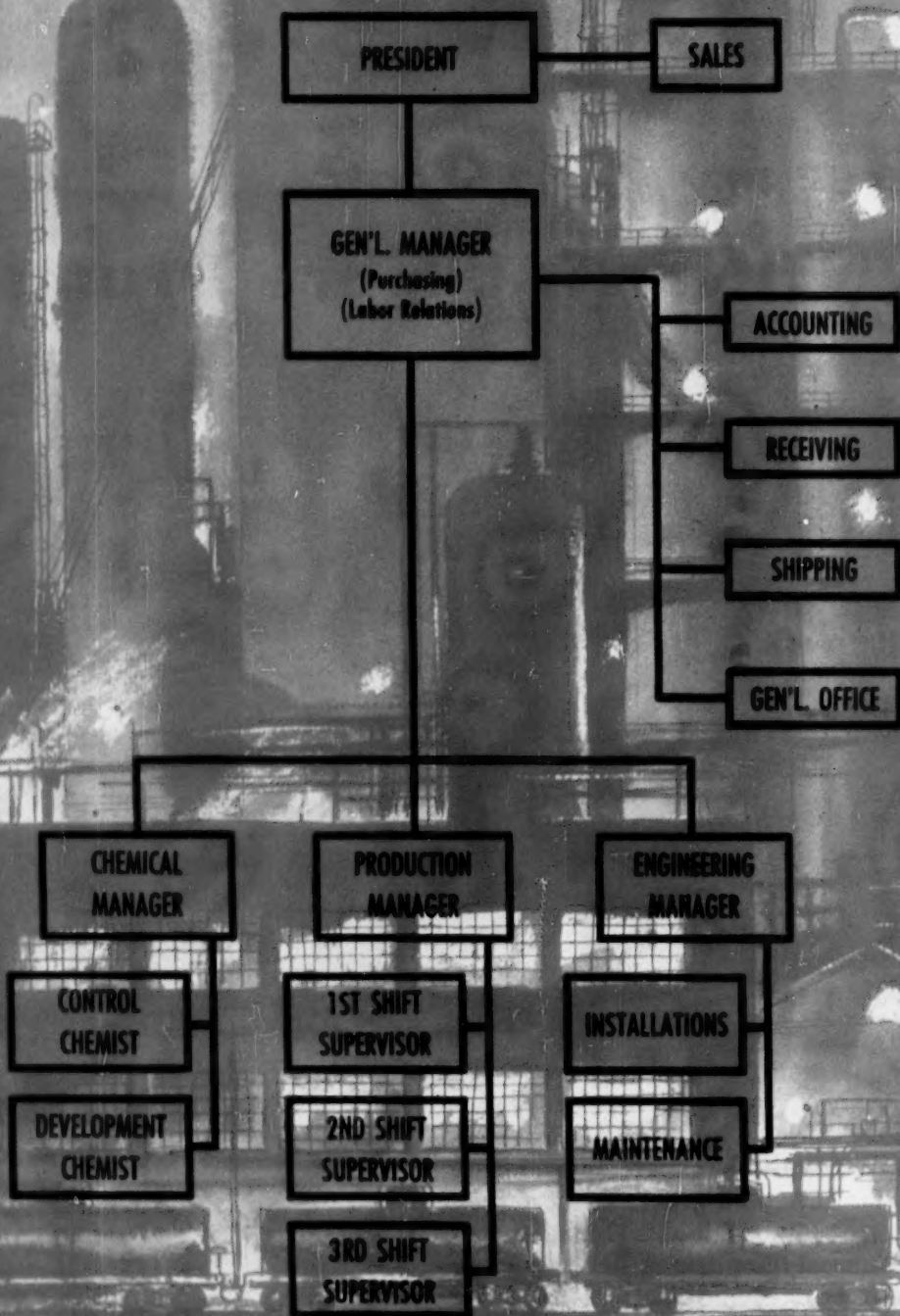
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ORGANIZATION CHART RELATIVE TO A CASE STUDY OF A SMALL CHEMICAL MANUFACTURER



The Small Chemical Manufacturer: A Biopsy

This case study of a small manufacturer of intermediate chemicals sheds additional light on this particular stratum of the chemical industry.

For understandable reasons, neither the firm's name nor the names of its products are used. But this company actually exists. Its problems are those of many small chemical manufacturers; its attempts at solutions, its position, its future are typical of this segment of the chemical industry.

Structurally, the firm is similar to many other small manufacturing concerns (see Organization Chart). It has been in existence for a little more than 20 years, turning out products that, except for an insignificant export business, are sold entirely to firms within the chemical process industries.

Business is, to a degree, seasonal; sales run \$4.5 million/year. The firm competes in fields occupied predominantly by large companies, employs 50-75 people, and is completely owned by the active head and his family.

Organization charts to the contrary, this firm has little in the way of formal organization. General fields are assigned, but each executive—at all levels from production supervisor on up—is expected to have a working knowledge of the entire business. Teamwork is stressed, and monthly dinner meetings are held, at which all phases of company operations are discussed and reviewed. A conscientious effort is made to make each executive feel that he is an integral part of the team.

At the same time, the owner tries to delegate much of his authority but is thwarted by his own psychological makeup. Formally, he insists upon knowing only about deviations from established or planned procedures; but informally, he makes it a point to keep close tabs on every phase of company operations.

Key Man: In theory, company planning is entirely long-range rather than opportunistic. Much of the planning—e.g., general policies and marketing or economic planning—is handled almost entirely by the owner, who reasons that only he is familiar enough with the total picture to determine

long-range direction, only he can adequately maintain the degree of secrecy required (a point heavily stressed), only he is in a position to devote sufficient attention to company problems and thereby minimize the natural disadvantages of a smaller firm.

Basis for these plans for the most part is derived from the owner's experience, his personal, constant and deliberate contact with industry people. Operating on a limited budget, the firm has no market research staff of its own nor does it use outsiders for this service. Occasionally, before the company adds a new product, the owner will carry out his own carefully planned market survey by contacting prospective users on a personal basis.

On the other hand, technical planning, the company discovered after trying various approaches, requires the services of at least a part-time consultant. The solution was to employ as a part-time (weekends and evenings) consultant the research director of a large chemical company. This permits the firm to have available the counsel of a top-flight researcher at a fraction of his full-time cost. Even if the company could afford the man

on a full-time basis, its operational scope is too small to make full use of his talents.

Measured Dollars: The company produces products on which procedures are fairly well standardized, and production rates have been determined. Within very close limits, other cost factors such as labor force and material costs remain constant and further simplify this problem. As with most other managerial functions, cost control is on a rather informal basis. But about five years ago, the owner installed automatic office equipment to expedite compilation of production data. As a result, any deviation from set production goals is investigated.

Budgeting also is a rather informal procedure and also falls under the shadow of the owner's guiding hand. The system used is to constantly review necessities, rather than allocate specific sums in advance; for all expenditures other than routine, it is necessary to secure the owner's approval. Here the owner admits his organizational weakness, blames it—at least in part—on his own long-ingrained habits.

What other reasons there are may well stem from a natural reluctance to let others spend company funds, which come in large measure from earnings that are plowed back into the business. Outside financing is available, of course, from banking sources, does account for some share of capital requirements. While interest is generally higher than that paid by a large firm, it is not considered a serious problem in over-all company operations.

Very early in its history, the firm set out to establish itself with a local bank. In time, the bank observed the soundness of the ownership and of the business itself; as a result, it now extends a generous credit line to the firm on short notice. For a firm that has followed the rather conservative

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THE BORDEN COMPANY
CHEMICAL DIVISION

C W Report

policies that this firm has, financing seldom presents too great a problem.

The capital structure of the firm consists entirely of voting and nonvoting common stock. The voting stock, issued at the inception of the business, is completely in the hands of the owner and his family. The nonvoting stock has been issued only within the last 10 years, and then only to five key employees in place of cash bonuses. (The owner felt this would provide them with additional income proportionate to company earnings, and at the same time would help to further company identification. Dividends are declared at the owner's discretion.)

Moreover, management makes every effort to keep overhead low so that it can weather any extreme competitive or economic storm that might blow up. Above all, the company emphasizes steady but unspectacular growth, refuses to be pushed into overexpansion. Were this a rapidly expanding firm, the owner feels, or were larger percentages of outside capital required, financing could easily become a major problem.

Personal Foremost: Where the owner exercises informal and only part control on other areas, he takes full charge of sales, does most of the work himself. For its field force, the company relies on a small, highly trained group of men who are more familiar with their industry and the total market for their products, on the whole, than are the salesmen of the larger firms.

Outside sales representatives—or, more accurately, commission agents—are rarely used, and then only when they can bring a particular piece of business into the firm. Greater use of these men undoubtedly would enlarge the company's sales area, management feels, but this would be overbalanced by diminished control of sales and service, and loss of personal contact with the customer.

At the same time, the marketing area of the firm is quite restricted. All

initial sales efforts are directed at markets nearest the plant. Only when filling out plant capacity becomes the overriding consideration does the company go farther away in quest of business.

But as for all small firms, this firm's most pressing problems stem from forces beyond its control. Trade relations and mergers are taking an increasing toll among small manufacturers. Most serious, perhaps, are the mergers. Of late, a large share of those in the chemical industry have been vertical rather than horizontal in nature. In purpose, the vertical merger sets up captive markets and captive customers; in effect, it closes off many sales avenues to the independent producer.

Only after he learns of the prevailing animosities within newly merged firms can the small manufacturer do anything about this problem. The politicking, petty jealousies, concern over future position under a new management—all very real factors for personnel of recently merged companies—provide the small manufacturer with his means of re-entry. His methods, impromptu and unofficial, depend largely on the ingenuity of his salesmen. But once appraised of any existing animosities, the small manufacturer does all he can to exploit them, often recaptures a sizable if unsteady share of his business.

Positive Approach: At best, such measures afford the small chemical firm only temporary relief, are, management is aware, in no way permanent solutions. Nor is extensive product advertising, in the usual manner at least, of much value in this respect. Even when it can be afforded, it is considered superfluous since customers are comparatively few and already well known. A better answer, the owner believes, would be a program of institutional advertising.

As far as pricing goes, any deliberate attempt to maintain lower prices would be at best foolhardy, and simply invite retaliation by the large firm. Nobody, especially the small manufacturer, could benefit from the resultant price war. Overpricing, of course, is an equally unrealistic approach; it is almost impossible to sell an equivalent product for a higher price. The best a small manufacturer can do in this area, declares management, is to leave well enough alone.

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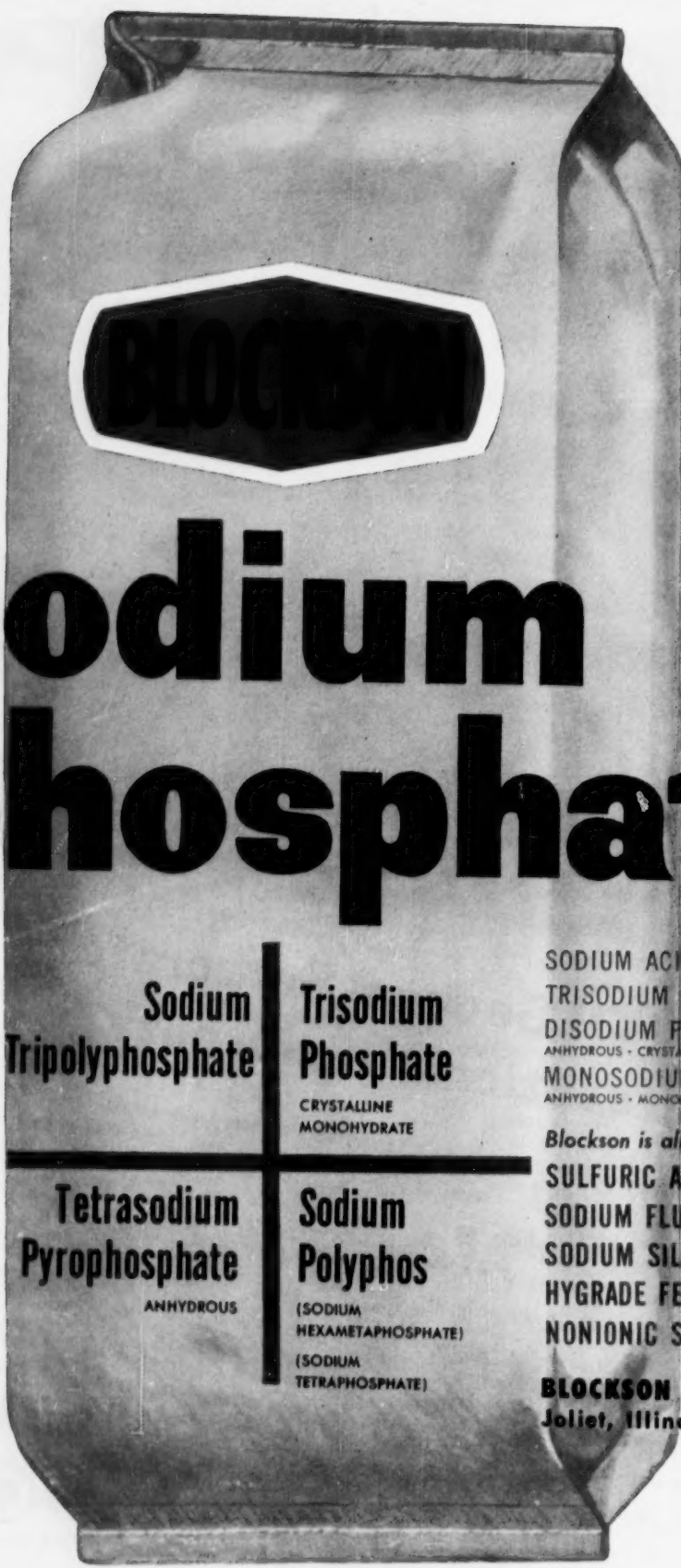
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C W Report

This leaves the small firm with little but service and personal contact to base its sales approach upon; and this firm makes the most of them. Customers like to deal with someone in authority; the firm puts its executive echelon on the firing line. Customers want prompt and efficient service; this firm does its best to give it to them. Decisions are quickly reached, questions are immediately answered. It may not be the complete solution of sales problems, management concedes, but for now it's apparently enough.

Building the Team: Of all the problems relating to this firm's labor force, the most difficult is recruiting, which is carried out almost completely by personal acquaintanceships or through recommendations. The company hires comparatively few people at or above the foreman level; and since each one must be capable of carrying his share of the load, extreme care is taken in selecting personnel. In large firms, a certain percentage of "dead-heads" can be tolerated. In a firm of this size, it would be disastrous.

As in most firms of this size, personalities play a very important role. Any employee on any level whose actions and attitudes are not in line with the team is promptly dismissed. No discriminatory hiring practices exist, and any show of discrimination or abusive treatment is considered cause for dismissal. Consequently, employee loyalty and conscientiousness run extremely high, and in turn, it appears that plant productivity is unusually high—considerably higher than in many of the larger firms.

The company has never had a strike. Operating employees were unionized several years ago, and relations with the union have been excellent. Employees are paid prevailing industry wages, and it is the owner's practice to have his permanent labor force (about 80% of the maximum labor force) work a six-day week with the sixth day being on an overtime

basis. In this way, take-home pay for the employees is higher than if more workers were employed on a 40-hour week. At the same time, should a slow period come, a cut-back to a five-day week still leaves the employees with normal wages.

Labor turnover is extremely low; the average length of employment in this firm is 12 years. In large measure responsible for this is the owner-employee relationship. The owner conscientiously strives to make every employee feel he's part of the company team. In addition, he acts as an older brother to many of the employees, who consult him on everything from marital troubles to choosing a family doctor.

Down the Line: Active as the owner is, nothing short of amebic fissioning could enable him to carry through at this pace on all phases of company operations. So to the general manager (see Organization Chart) fall certain responsibilities, all internal.

Working directly under the owner-president, the general manager (oldest employee in the firm) might be more accurately described as general assistant to the president. Only as head of shipping, receiving, accounting, and general office work does he function truly as a supervisor. With respect to the chemical, production and engineering sections, he serves more as a coordinator. He personally handles purchasing, but when it comes to negotiating prime raw material contracts, he finds himself once again harnessed tandem with the president. Labor relations are handled in much the same way as purchasing.

Directly under the general manager come the line operations. The main body of this, manufacturing, is given two heads, the production manager and the engineering manager.

The latter's primary function is development and commercial adaptation of new processes and equipment. And with a limited amount of capital available for new equipment, present equipment must be kept in top operating condition for as long as possible; thus maintenance is given a top-priority rating. Too, since the company relies in large measure on manufacturing innovations of the homemade variety, it realizes it needs a top-flight man in this spot, and is simply giving him the authority to go with his responsibilities.



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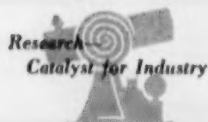
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C. W. Report

At the same time, this cleft authority in no way reflects upon the actual production manager. Attainment of an economical production level, for example, was established as one of the company's prime initial objectives. Riding herd on his three shift supervisors (each a graduate chemical engineer), the production manager has tuned his equipment and capacity to the point where only insignificant savings could be effected by increasing the size of the process. And money gathered during the lush years of 1950 and 1951 was immediately assigned for equipment modernization to insure maintenance of this delicate balance.

At all times, of course, equipment is purchased strictly on a utilitarian basis. In contrast with the usual behavior of many large firms, this company almost never spends capital funds for convenience items or plant beautification.

Offshore Research: As would be expected in a firm of this size, only a very small research staff is (or can be) maintained. There is a chief chemist, and under him a control chemist (who also takes on the function of inspection) and a development chemist. In this small group, however, titles have little significance and positions are flexible. At anytime, the three may be working separately on different problems or together on a particular pressing problem.

In the past, a good portion of laboratory time was devoted to finding a waste-product source of raw materials. The research staff solved this problem about three years ago, and today much of the output comes from this low-cost waste. To a large extent, this one development has helped offset the small firm's natural disadvantage with respect to raw-material supply.

At present, most of the laboratory time is spent on production control and process improvement work. While the company feels it is desirable for the laboratory staff to devote its time

and effort to research on new products, financial limitations make this impractical, and current problems make it almost impossible.

Some time ago, it was possible at a quite reasonable cost to have university professors assign a particular project to students working on their thesis. For the past five years, however, this practice has been seriously frowned upon, and today exists in only a very few schools.

With this approach blocked off, the company turned to its present procedure: contracting with European laboratories to carry out needed basic research. In this way, the firm gets its research at 20-25% of comparable stateside costs. Moreover, the owner feels, the European laboratories do a particularly fine job in the field of basic research. From Europe, then, he brings the results into his own laboratories for commercial development.

Changing Times: In the past, the research objectives of this firm were solely imitation. Management believed that a year or two after a large firm announced a new product or process there was still enough time for a small company to enter the field. Since World War II, however, the attitude of the small manufacturer has changed considerably in this respect.

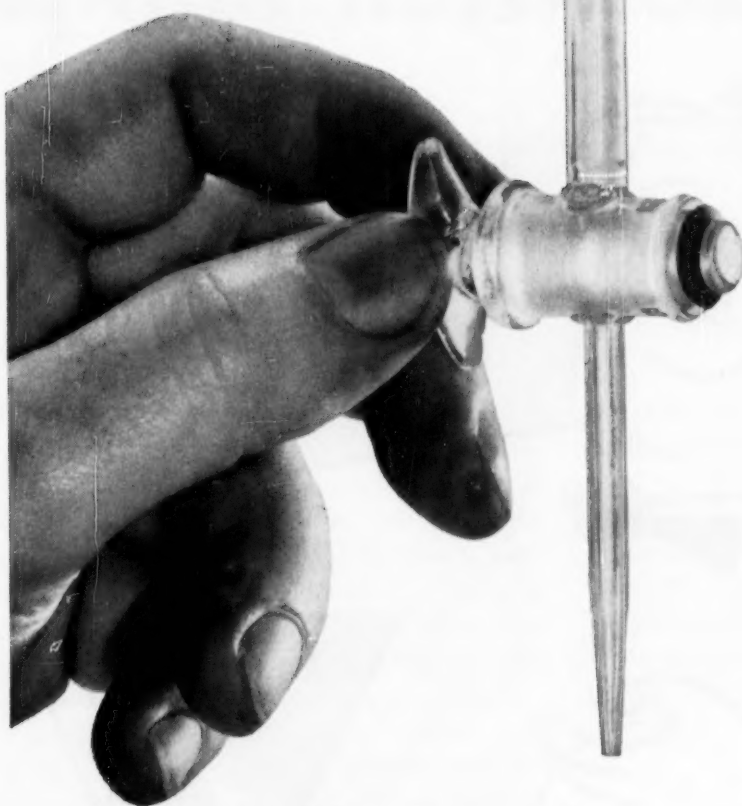
In order to grow or even to exist, the owner now believes it necessary to do more of his own research and development work. Moreover, he feels that the problem of research for the small manufacturer will become even more pressing in the future. With this in mind, he intends to assign an ever larger portion of the firm's annual budget to research and development. First on the agenda: a new research laboratory.

A distinct reversal of policy from a short six or seven year ago, this is only one of the lessons in survival to which he—like more and more of the small chemical manufacturers—is beginning to pay heed.

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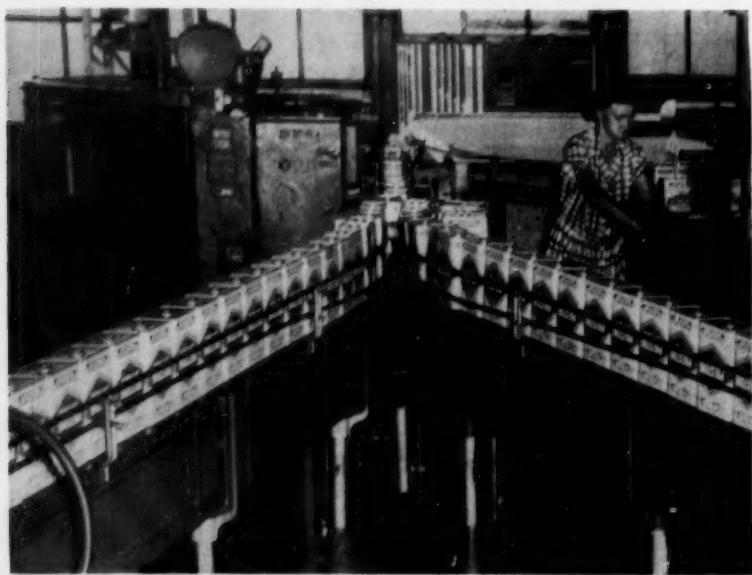
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CAN FABRICATING: After color lithography, cans are automatically formed.

New Wraps for Specialties

New models, materials, and manufacturing processes boost demand for metal containers for chemical specialties.

Coming up: welded cans (steel and other metals), more "stackable" container designs, including aerosol cans.

With its ears understandably attuned to hearing its own role in the modern packaging business, the chemical industry is likely to be proudest of its developments in plastics for films and molded packages. Some of the major contributions by the chemical industry, however, have been to metal cans, the old standbys of packaging. And reaping much of the benefit of the advances have been specialties makers.

- The vinyl-lined, cemented-seam, liquid synthetic detergent can exemplifies the gains from container company-chemical industry cooperation. A polyethylene-nozzled syndet container (Continental Can's Fluid Flow, *CW*, May 21, p. 72) is the latest twist in this type can.

- This week, many specialties makers are taking delivery of their first supply of the new, "stackable" F-style (oblong) container (*CW*, May 28, p. 92), a development spurred by makers of household chemicals.

In Need of Attention: Although food packaging is the biggest outlet

for so-called "tin cans" and has therefore been the target of most container research, the challenge offered by chemical specialties has received increasing attention from can makers.

The requirements of the two fields differ. Where the food packer generally chooses a plain can that can be paper-labeled, the specialties maker often wants an individually lithographed can. (And where a paper label covers a solder seam, a lithographed label can't extend into the solder area—a half-inch strip is left plain.) Where a dripless spout is merely a handy convenience on a food product can, it can be basic to the success of a specialties can.

To these buyer preferences, add problems in lining and capping. Then consider some of the goals of the can maker—less dependence on tin-coated steel plate, more colorful lithography, faster can manufacture, and you have an idea of some of the many factors a can maker must consider to produce a satisfactory container.

Research Payoff: But by keeping these things in mind, can makers have come up with a number of importantly improved containers.

A major area of interest has been in new raw materials. Tin plate is still the number-one item—the resistance of tin to corrosion and its ability to give an easily and securely soldered joint have kept it pre-eminent. But now, electrolytically applied tin (rather than dip-applied) means only $\frac{1}{4}$ as much tin is required per can as before.

In addition to thinner plating, tin-free materials are now quite common.* The currently used liquid syndet cans are tin-free, for example. The interior is coated with a two-part organic compound that prevents damage by the syndet concentrate. This liner also permits metal packaging of household ammonia.

Almost as important as the lesser dependence on tin have been developments in side-seam cements. The thermoplastic compounds (formulation is guarded by the can makers) can be used with either tin plate or black plate. Their big advantage is that they permit all-around lithography—no plain strip remains such as is common with soldered cans. Although the cement-seam cans are sturdy, they aren't expected to meet the tough specifications of aerosol containers.

In linings, many of the current forms are modifications of the two-part beer-can coating developed in the late '30s (*CW*, Nov. 1, '52). In this, an enamel coat is applied before the can is fabricated; the finished can has a spray-applied vinyl (or similar) top coat.**

What's to Come: A lining material of the future, according to American Can Co. (Canco) might be aluminum. Applied by "cladding," electroplating, or vapor deposition, it offers good protection. But high cost and problems in handling might hold it back for a while. Too, nickel linings have shown up well experimentally but have similar drawbacks.

Canco, at the opening of its new

* The aluminum-based, plastic-coated containers originally developed by Reynolds Metals Co. are still in limited manufacture, although Reynolds itself no longer makes them.

** Not all specialties containers need linings. Most aerosols, for example, can be packed in plain tin plate. Water-based shave creams are an exception. Also, containers for oil-based paints are seldom lined. But a protective coating is required on cans for water-thinned paints.

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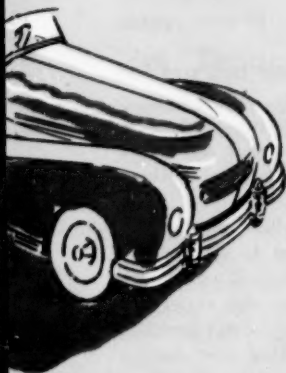


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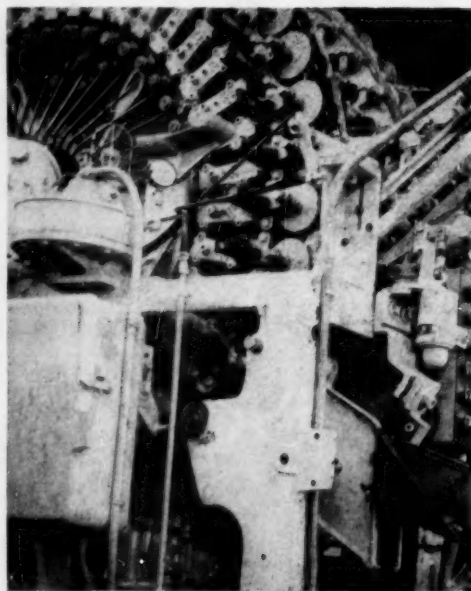


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SPECIALTIES



CONTAINER TEST: On giant testing wheels,

research laboratories in Barrington, Ill., late last month, demonstrated some of its work in welded containers. This development, of great industry interest, concerns side-seam welds—top and bottom would still be crimped on. Advantages of the welded construction:

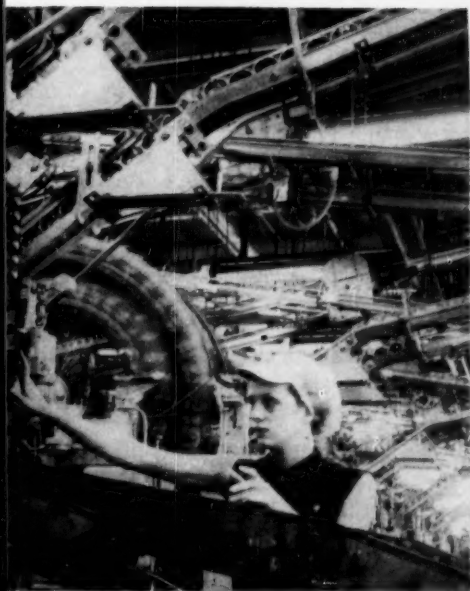
- Can be applied to many metals besides steel;
- Permits extremely high speed of fabrication;
- Makes a strong can.

Aerosolers in particular should be interested in the properties of these sturdy, new containers.

New in Design: Although can makers are not reluctant to design specially sized and shaped containers, they prefer to keep the variety of packages down. They aren't hesitant, however, about making new designs that offer advantages (besides those of dimension) to the user.

The stacking F-style cans are a case in point—one container producer estimates that 80% of the consumers of pint and quart F cans could use the stacking models to advantage.

That stacking feature could be useful in other areas—look for the introduction soon of stackable aerosol containers. Already, this year, "pint" sizes (14- to 17-oz.) aerosol cans have made their debut, used for some of the products formerly packaged in 12-oz. containers (CW, May 28).



cans are automatically checked for leaks.

There's no doubt that can manufacturers count on their new developments to give them a good year in '55. It should be a good year for specialties makers, too—for seldom have research projects in metal containers resulted in developments so valuable for their products.

Fair Trade' Schism

Somewhat reminiscent of the disagreements between the National Assn. of Retail Druggists and the American Fair Trade Council before the enactment of the McGuire Act is the recent split between AFTC and the Bureau of Education on Fair Trade (BEFT). The disagreement this time is over the proposed amendment by Sen. Homer Capehart (R., Ind.) to the McGuire Act.

Capehart suggested (May 24) that the McGuire Act be altered to make manufacturers who sell and enforce "fair trade" price to one group, but also "knowingly" sell to price-cutter, subject to court action—injunctive relief and/or triple damages.

Costing Friends: The Capehart bill covers a practice that is not uncommon. In particular, charge several department stores, makers of durable goods have been selling to both sides of the street. The result, the AFTC believes, is a weakening of the whole "fair trade" idea, and the loss of many

June 18, 1955 • Chemical Week

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Average Molecular wt.	330	420	470	660	700	780	940
Viscosity							
Saybolt seconds at 100°F	114	516	1040	7900	14000	44000	140000
at 210°F	40.6	66.5	93.8	375	540	1010	3000
Poise at 77°F	0.36	2.0	4.8	38	75	200	800
Gardner-Holdt at 77°F	A-1	H	R	Z-2	Z-4	Z-6	Z-9
Viscosity Index	100	105	102	—	—	—	—
Weight-Volume							
Specific Gravity 60°/60°F	.831	.847	.854	.871	.878	.881	.894
Pounds/gallon	6.92	7.04	7.11	7.25	7.31	7.34	7.44
Color							
N.P.A. or A.S.T.M.	1.5	1.5	1.5	1.5	1.5	1.5	<1
Flash (Tag), °F	230	235	245	280	295	360	475
Pour Point (ASTM) °F	-65	-35	-25	0	5	+20	+35
Iodine No.	53	46	43	36	34	33	32
Refractive index (20/D)	1.4655	1.4730	1.4759	1.4860	1.4886	1.4918	1.4955

Information

For additional information on INDOPOL Polybutenes write for INDOPOL Technical Bulletin 12. Your request will be given prompt attention.

INDOIL CHEMICAL COMPANY

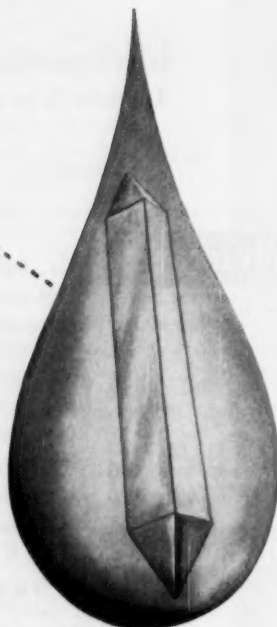


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SPECIALTIES

supporters of minimum pricing.

But BEFT figures that the penalties for selling to a price-cutter—even if the selling is done unwittingly—might keep firms from daring to try "fair trade" at all. BEFT thinks retailers already have sufficient weapons against firms that enforce minimum prices to one dealer, but also sell to discounters.

Druggists' Spokesman: Although it is not a "membership" organization like the American Fair Trade Council, the Bureau of Education on Fair Trade has a number of backers in industry. Many feel that BEFT is a spokesman for the drug and cosmetic industry. On the other hand, AFTC also has many members in these industries.

AFTC says it was unprepared for BEFT's blast at the Capehart amendment—but that it wasn't entirely unexpected. Whether the rift can hurt the "fair trade" cause remains to be seen.

Tinted Cleanser: It doesn't make housework any easier, but it brightens up the chore—that seems to be the thought behind Alfred Houser's recently patented blue abrasive cleanser (U. S. Pat. 2,708,157). The compound contains ultramarine blue to impart color.

Reflected Glory: Changeable-copy advertising signs can be made to shine in the glow of car headlights with a new reflective screen-process ink for paper and card stock. Minnesota Mining & Manufacturing Co.'s (St. Paul, Minn.) Codit can be used on traveling displays (as on buses) and curbside signs. Its nighttime reflective qualities are about 50 times brighter than white paint, the company says.

Draw the Line: An insecticide pencil consisting of 2% technical chlordane and 98% "inert ingredients" is made by Asco Electronics Co. (Andover, Mass.). Users draw line on door and window sills, baseboards. It is said to kill ants or roaches that cross it. The pencil sells for \$1.

Fire Detector: Wagner Hardware, Inc. (Chicago) is selling an automatic fire-warning device—a fluorocarbon-filled, pressurized container that emits a loud whistle at 156 F.

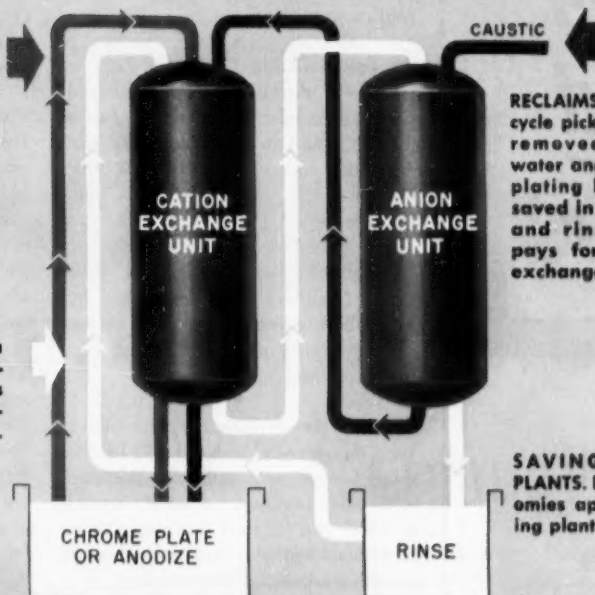
Soft and Antiseptic: Tesco Chemicals, Inc. (Atlanta, Ga.) introduced its

PROCESSES: Ion exchange "swaps" chemicals in solution at high speed ... purifies, recovers, concentrates, separates. An example:

How Ion Exchange Cuts Plating Costs

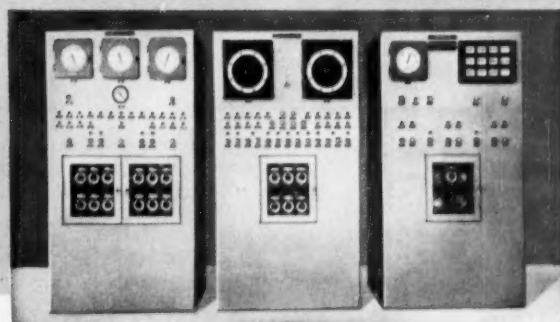
RENEWS PLATING BATH. This cycle removes aluminum, copper, iron and other impurities ... allows continued re-use of bath ... eliminates disposal problem. Compared with the usual toxic-waste disposal equipment, ion exchange saves up to 50% on initial costs, 75% on operating costs, 80% on floor space.

RENEWS RINSE WATER. Cation unit removes metallic impurities ... anion unit removes chromic acid ... allowing continued reuse of rinse water. Cuts consumption 90%!



RECLAIMS CHROMATE. This cycle picks up chromic acid removed from the rinse water and returns it to the plating bath. Chromate saved in the plating bath and rinse water often pays for the entire ion exchange installation!

SAVINGS FOR SMALL PLANTS. Ion exchange economies apply to small plating plants as well as large.



AUTOMATIC CONTROLS for ion exchangers in an auto parts plating plant. These controls simplify operation. No specially trained operators or technicians required.

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Ion Exchange Cuts Process Costs

A fast-growing unit process, ion exchange is already a multi-million-a-year business. Here are some of the jobs it's doing now:

- **Water Conditioning** is biggest ion exchange use ... removing scale-forming hardness for homes, steam boilers ... softening cooling water so it can be used over and over ... purifying process water for TV tubes, synthetic fibers ... reclaiming waste water (e. g. chromate plating rinses).
- **Process applications:** Removing impurities from formaldehyde, glycerin, alcohol, plating baths and other chemicals, also wines, sugar solutions; recovering copper and zinc from rayon plant

wastes; concentrating metals in dilute solutions such as plating rinses, mine waters; removing iron from phosphoric acid pickling solutions; producing colloidal silica used in textiles, waxes, foundry molds; making antibiotics, e.g. streptomycin, and other medicinals.

• **Largest manufacturer** of ion exchange equipment, The Permutit Company (N. Y.), got a head start in ion exchange with the natural zeolites first used in water conditioning ... now manufactures highly efficient synthetic resin ion exchangers of all types. Permutit is the only U. S. producer of both resins and equipment. Making both allows proper "mating" of the two ... en-

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If you have a problem involving the recovery, concentration or separation of chemicals in solution, a Permutit ion exchange process can probably help you. Address: The Permutit Company, Dept. CW-6, 330 West 42nd St., New York 36, N. Y.

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SPECIALTIES

new hand soap, Acto-Lan, last week. A germicidal soap made with Monsanto's Actamer (bithionol) and lanolin, it will be available throughout southeastern U. S.

Silicone Molding: Bakelite Co. has four new silicone molding materials said to offer heat resistance ranging up to 660 F and better moldability than previous compounds. GMGA-5001, GMGA-5002, GMGA-5003, and GMGA-5004 are claimed to make possible substantial savings in weight and size of electrical equipment using them. Numbers 5003 and 5004 are glass-filled, designed for greater impact resistance along with their electrical qualities.

Sun, Go Away: Tanners who like to keep the sun well in hand will be sold a sun bonnet as a half-price premium with each purchase of E. R. Squibb & Sons' Sun 'n' Surf Sunburn Cream or Suntan Spray. The Shap-o bonnet can be packed flat for traveling.

Top Coater: A cement for felt-base roofing has been developed by Ray

Hampton for the Southport Paint Co. Inc. (Savannah, Ga.). Designed for use with layers of felt and metal foil, the coating (U. S. Pat. 2,708,170) is composed of vegetable-oil gum, a volatile hydrocarbon distillate, and mineral filler.

Nitrogen Trickle: A new fertilizer, Du Pont's Uramite, releases nitrogen slowly and steadily to plants throughout the growing season. The prolonged-release fertilizer has a 38% nitrogen content, is a mixture of methylene ureas. Its first customers are expected to be growers of turf and ornamental plants.

Aimed at Grain: The most important application for Prentox Pironyl "75", Prentiss Drug & Chemical Co., Inc.'s (New York) new insecticide, will be for the protection of grain. Containing no kerosene, no odorless base oil, nor any other solvent, it is designed for situations where it is important that insecticides be free of unnecessary contamination. It is a combination of pyrethrum and piperonyl butoxide (synergist).



Throwaway Toothbrush

SHOWN demonstrating his new invention, a disposable toothbrush called Toothette, is George Halford, Jr. (Willoughby, O.). The cleaner head is made of polyurethane foam, impregnated with an ammoniated dentifrice, and attached

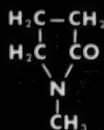
to a fiber handle. Toothette, individually packed, and designed to sell for a nickel, is used "dry." User's saliva activates the dentifrice, food particles are said to be absorbed by the sponge. After use, cleaner is discarded.

Before the end of
1965, GAF's new HIGH
PRESSURE ACETYLENE DERIVATIVES
plant at Calvert City, Kentucky, will be on
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Soluble in water,
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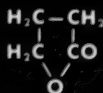
Effective solvent for Chlordane, Lindane, Toxaphene, Phenyl mercuric acetate, 2,4-D, Maleic hydrazide, etc.

Opens a new field of polyol reactions—an excellent solvent for sugars including sucrose, dextrose, lactose, etc.... Permits reactions of these sugars with sodium, acid chlorides, acid anhydrides, etc.

Selective solvent for acetylene in natural gas stream... Dissolves 39 times its own weight of acetylene.

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B.P. 204°C
FLASH PT. 209°F

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Soluble in water, acetone,
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alcohols, etc.

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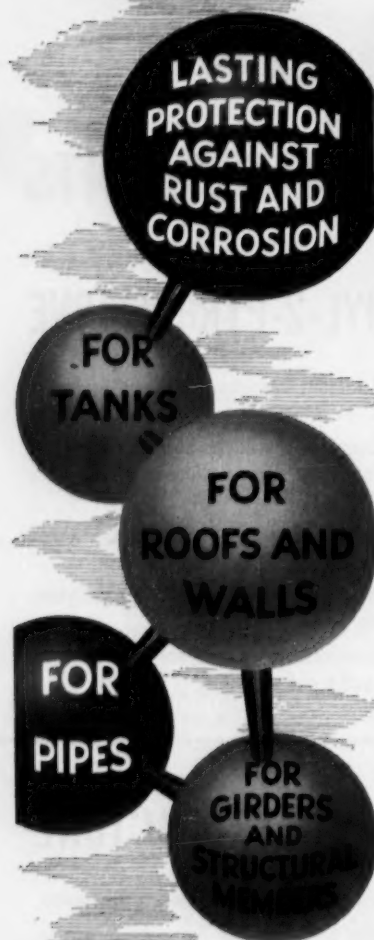
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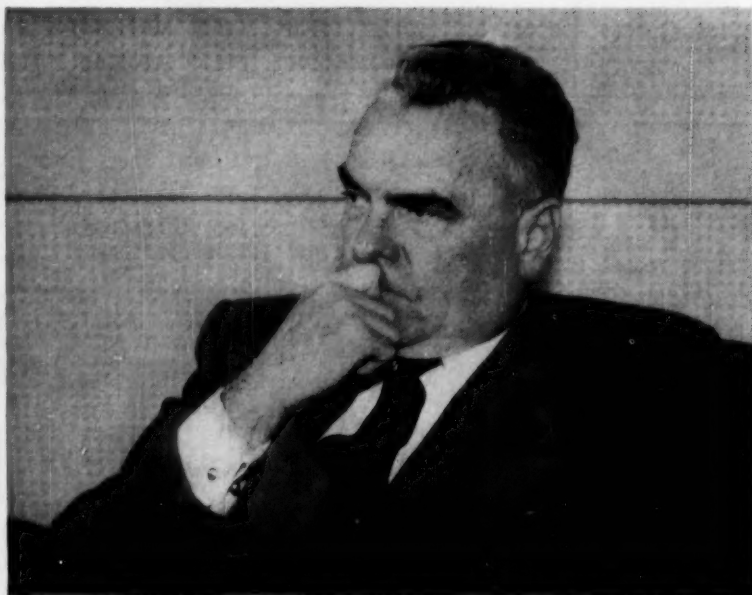
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SPECIALTIES



REORGANIZER ROBINETTE: The board said 'when.'

How Much Now, How Much Later?

Instead of saving up their money and then buying, families generally prefer to buy a new house on a payment plan and move in at once. Businessmen reorganizing a company often feel the same way. Rather than plowing back profits for a full three- or five-year reorganization plan, they sometimes like to do their rebuilding in instalments, collecting the benefits from each step as soon as they can.

This was the reaction of the board of directors of the General Paint Co. (San Francisco) to the reconstruction plan of Roy B. Robinette. That's why Robinette resigned last fortnight.

A Little Bit of Merger: When Robinette joined General as president in April, 1953, the firm was an old and major factor in the Western paint industry—and nearly bankrupt. Plants, products and procedures were outdated. General, result of merger of nine companies in 1928, had never really been integrated. The nine companies had become six operating units, in six Western areas, each unit with its own product line, production and operations. The ratio of current assets to current liabilities was 3.7 to 1; a bank loan of \$700,000 was outstanding, current bills totaled \$375,000, and the firm had banked only \$50,000.

What Was Done: Robinette modernized, centralized and trimmed, kept

General under reconstruction for two years, had plans for another year or so. One of the first things he did was to close 13 of 47 branch offices—there wasn't enough management talent to go around and not all offices were in locations that lived up to their original promise. Several were in the red.

Personnel was sifted out, too. Robinette authorized \$100,000 in voluntary severance pay, and during the first year about 250 employees left. Offering a challenge instead of money, he got 50-60 new men.

Such comings and goings, of course, was hard on morale, but employees are now settling down, thinking in terms of careers. Fostering career feeling: a company program of underwriting employee education, paying 80% of tuition for pertinent courses.

Other changes:

- Company was reorganized into three divisions (Domestic Paint, Export, and Hill Hubble Pipe Wrapping.)
- Three factories were scrapped.
- The Glass Division in Spokane was sold.
- The Walter Ferem Co. (Denver) was bought, added to Hill Hubble (long General's biggest money-maker).
- Export offices were added in Puerto Rico (will be added in Manila, Okinawa).

When the board said, "stop," Rob-

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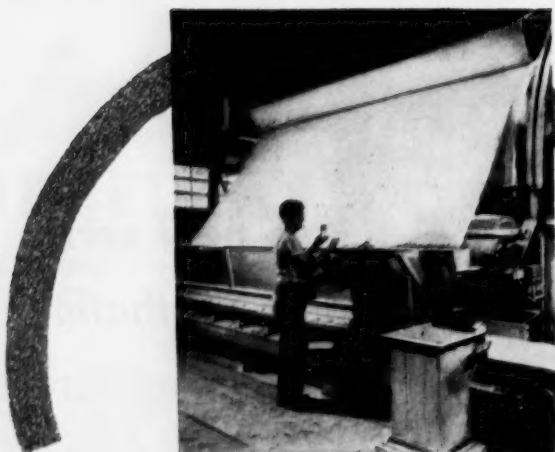
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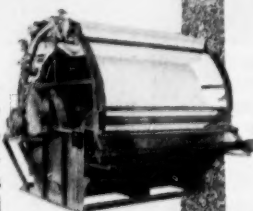
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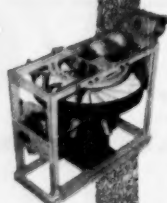
The new FEinc horizontal filter, simple, trouble-free, is recommended for free-filtering materials such as coarse granules, or fibrous cakes. Counter-current washing is available.

FEinc scraper filters, for standard problems, are quality built, with many special constructions, such as rubber covering, totally enclosed housings, etc. On filter at right, for instance, drum submergence can be varied at will from zero to 30%.

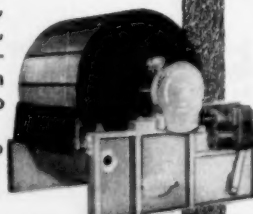
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SPECIALTIES

inette had General in running condition. Says Robinette: "We've done all the things we think are fundamental. We're well set, financially; we have a young, aggressive management; our physical facilities are up to snuff, our product line is modernized and we're doing research. If we don't make a good showing now it'll be my scalp."

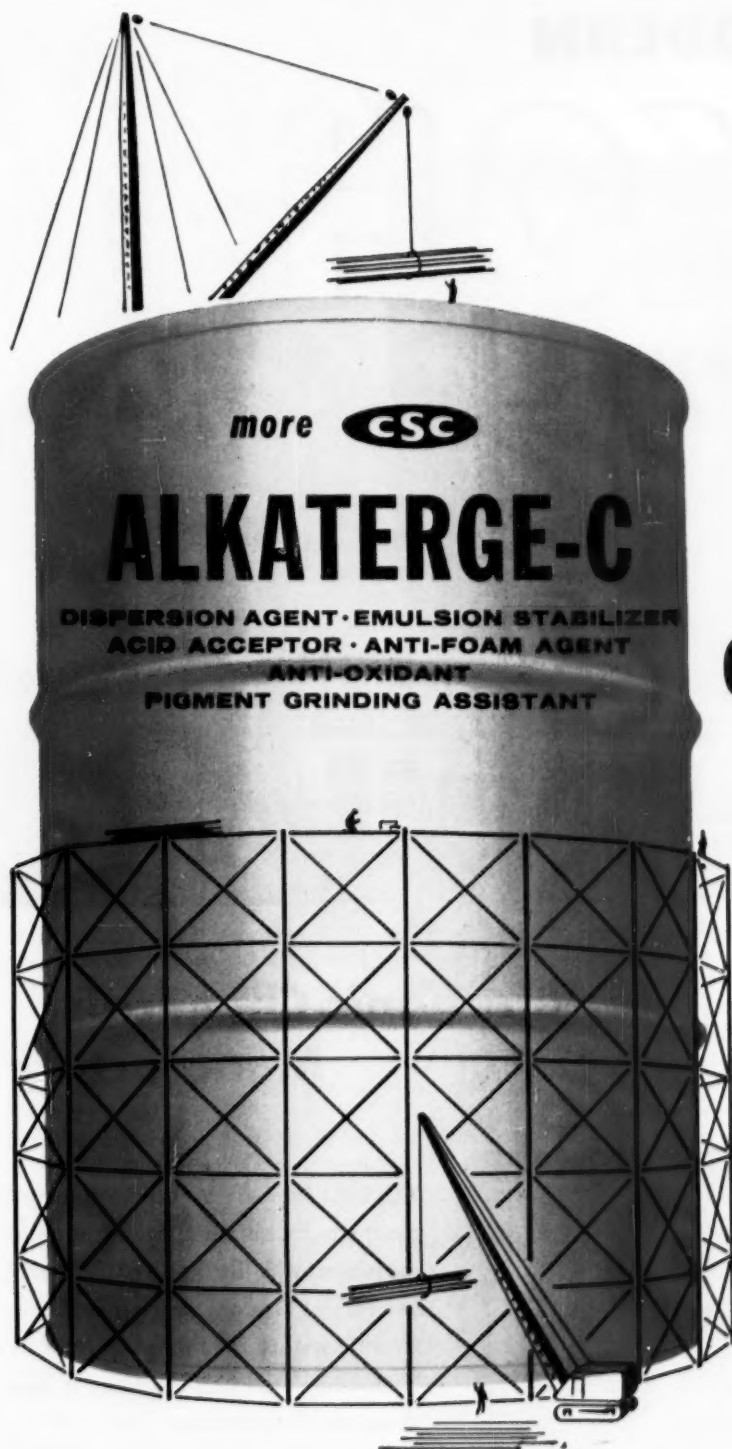
When's Pay Day? Plainly they haven't yet made a good showing in the profit picture. But Robinette didn't plan to—he was still looking toward the future. Profit was low when he came in: only \$227,403 on \$12½ million sales. On the latest statement, however, profit was much lower: \$16,705 (sales were down too: about \$12 million) chiefly because of reorganization expenses.

That is what disturbed the board. When Robinette proposed cutting back still more profit (for a merchandising program—a bigger sales force and more advertising—to make the company hard, competitively) they balked, wanted to see what happened with the changes already made, collect the money that came from these improvements. The going had been getting steadily stickier for his program, so Robinette quit.

Successor Sidney Rasmussen (one of the founders of the company, president 1940-48) will have a gyroscopic role, holding the course steady, changing neither forward nor backward from the reorganizing Robinette has done. He will start with a good show, the introduction of the biggest dividend of the new research program.

New Paint: On June 24, General will announce Faze Gloss, a new high-gloss (85 minutes on a 60 F gloss meter), water-thinned, latex-based enamel. Along with usual advantages of water-thinned paints, (ease of cleanup, elimination of solvent hazards, low odor, rapid drying), the new product is said to apply as easily as flat latex finishes. This is hoped to put General into the growing (particularly in the West) do-it-yourself market, an area it has never really tried.

In spite of declining profit and sales, General now reports its ratio of assets to liabilities at 6.4 to 1. But don't look for a long, quiet period: Robinette is still an active member of the board, still has a substantial interest in the company, still has ideas.



**now under
construction**

Industry has been finding more and more use for this versatile non-volatile surface active agent as such, as salts or oil-soluble soap form. Because of its many applications, demand for CSC's ALKATERGE-C now exceeds supply. This situation will be rectified shortly with the expansion of CSC's new Nitroparaffin facilities at Sterlington, La. Beginning in August, 1955, production capacity will be almost doubled, assuring adequate supplies of ALKATERGE-C for some time to come. Meanwhile, if you are interested in the uses, properties and specifications of this much-used compound, write for literature and a sample to Industrial Chemical Sales Department, CSC, 260 Madison Avenue, New York 16, N. Y.

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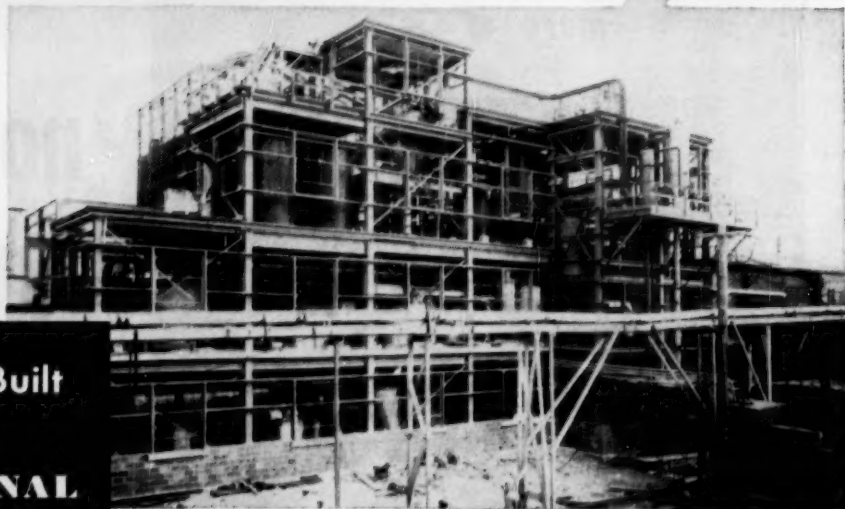


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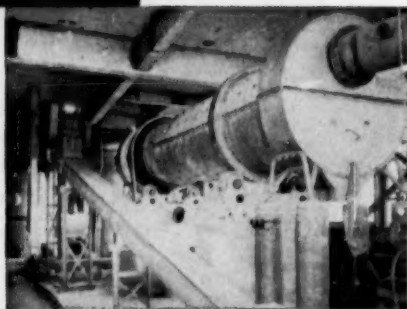
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RESEARCH



SPEAKERS CARVER, BASS AND MIT's SHEPARD: They left little doubt that . . .

Researchers Are People

To get more from your research, know your researchers. That's the message that emerged from last week's sixth annual Industrial Research Conference.

Without a doubt, the researcher is the most studied member of industrial society. Enlightened management, for good reasons, is concerned about what makes him happy, productive, sociable, efficient, a team player, an introvert, an administrator, a better report writer, etc. The researcher as a human being had the attention last week of more than three score industrial executives gathered at baronial Arden House,* Harriman campus of Columbia University, in the Ramapo hills north of New York City.

Occasion: Columbia's sixth annual Industrial Research Conference, which set out to explore "the human relations aspect of industrial research." Speakers included such chemical research luminaries as American Cyanamid's Norman Shepard, Olin Mathieson's Edward Hartshorne, Eastman Kodak's Emmett Carver, Mellon Institute's Raymond Hartigan and Arthur D. Little's Lawrence Bass. Also present: Mass. Institute of Technology's Herbert Shepard, who discoursed on social structure in the laboratory.

In the broad sense, creativity was the issue before the house. "My

* Built by Edward Harriman, father of New York's Gov. W. Averell Harriman, who gave the house and property on which it is located to Columbia in 1950.

own personal definition of creative thought," volunteered Carver, technical assistant to the general manager of Eastman's Kodak Park works, "is anything I would not have thought of myself."

Elaborating, however, he defined a creative idea as one that comes from inadequate data or from data so scattered or hidden that routine methods of thinking would never have assem-



KEYNOTER WATERMAN: For a tangible problem, an implied solution.

bled them to produce the result in question.

One way to spark creativity within a research organization, according to Carver, is to create a favorable environment, one in which "two or three or more men could really combine their gifts, combine their knowledge, their wisdom and their creative ability to function in much the same way as a single great mind. . . .

"The one environment where I have known this to happen oftener than in any other," he reveals, "is when two members of a group meet in a club car on their way home from a scientific meeting. They have had an exciting week. They are relaxed. Their inhibitions have been removed by the highballs they have before them.

"They get to talking and ideas begin to form. There is no thought that the ideas will be good, no thought that the ideas should be saved for private use. The team begins to function as a team should, and a creative thought has been born."

Carver doesn't propose that every laboratory have a club car especially fitted out for creative thinking. His prescription for creating the right atmosphere: a little leisure, complete trust, absence of jealousy, friendly cooperation and interchange of ideas, pride in the team overshadowing individual pride.

But most important is having the right people. "Unusual men," Carver declares, "are best for creative thinking." He readily concedes that "un-

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RESEARCH

usual men"—unusual in terms of personality traits, method of working—do not always fit in the organizational chart. The answer? "Make the chart fit the man."

In other words: organize your researchers, in the light of their individual traits, so that they are in a position to do their best work.

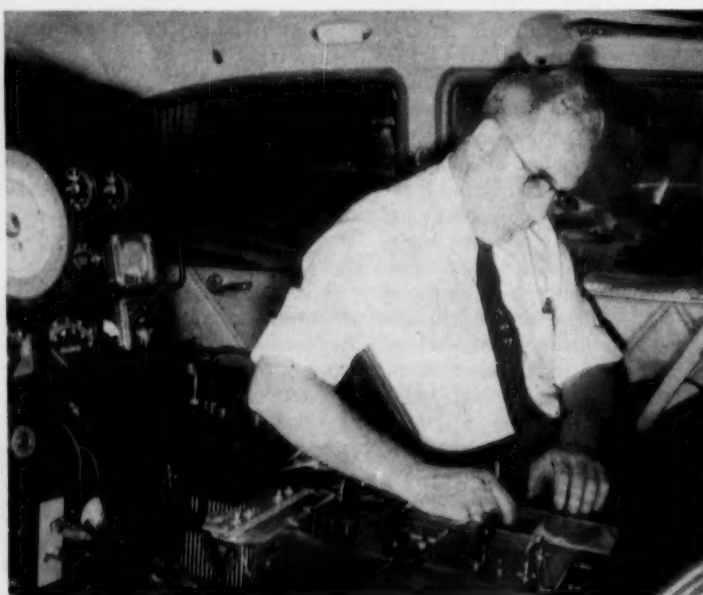
This, of course, demands first that you know what these traits are for different individuals. And that's not easy, as Robert Pearce, executive vice-president of the management consulting firm of Worthington Associates, points out. "Researchers are people," is Pearce's message, "with hopes, ambitions, disappointments, loves, hates, disgusts, frustrations. . ."

Their on-the-job functioning, he states, is influenced to an important degree by personality factors. As more is learned about the ways in which

mental processes are influenced by personality factors, it is becoming apparent, avers Pearce, that complex problem-solving is not so coldly logical and rational a process as was once believed.

Getting to know your researcher, with the aid of expert personnel counsel, has other, more direct, values. According to Pearce: it enables management to give the individual the particular kinds of satisfactions he wants in his work, and to make intelligent allowances for minor quirks of personality in each man's behavior.

Implicit in the remarks of Pearce, Carver and their fellow speakers was one answer to the scientific manpower shortage profiled by keynoter Alan Waterman, director of the National Science Foundation: more creative researchers may temper the need for more researchers.



Eye on the Back Seat

THIS IS THE LATEST thing in test cars used by petroleum companies in the evaluation of new gasoline additives, lube oils, etc. Developed by Esso Research and Engineering, the vehicle simplifies the task of gathering data on a multitude of automotive performance characteristics. Key: a high-

speed movie camera in the dashboard scans the instrument faces, can record readings at the rate of 85 frames/second. Only 15 seconds of the film, reports Esso, produces more than 25,000 items of data on power, speed, rate of acceleration, etc. Driver's comments are tape-recorded via a microphone.



Dependable Source for Chemical Raw Materials



Lee O'Leary, purchasing agent, Ansul Chemical Co., Marinette, Wisc., and Russell Brustmann, assistant purchasing agent, discuss Ansul's basic chemical requirements with J. C. Mills, a representative of Wyandotte Chemicals.

"Wyandotte developed a new product to meet our specifications!"

- Lee O'Leary, p.a., Ansul Chemical Co., Marinette, Wisc.

In the little booklet that welcomes visitors to the Ansul Chemical plant at Marinette, Wisc., this statement can be found: "Ansul is more than a chemical company—it is a unique combination of a chemical-mechanical manufacturing concern."

"In all of our activities," states Lee O'Leary, Ansul's purchasing agent, "we have had to set some pretty rigid specifications, in order to maintain our own high quality. These, of course, apply to chemical ingredients.

"The chemical industry was most co-operative in helping us

to realize our ambitions. Take Wyandotte, for example. Their research and production departments worked together to develop a new product to meet our unusual specifications.

"During this period, Wyandotte Field Representatives and Technical Service men worked very closely with us. Today, we enjoy the same fine co-operation from Wyandotte, at all levels."

If you want a source of chemical raw materials that you can count on, year after year, for uniform quality and dependable service, try Wyandotte. In writing, give as much of the back-

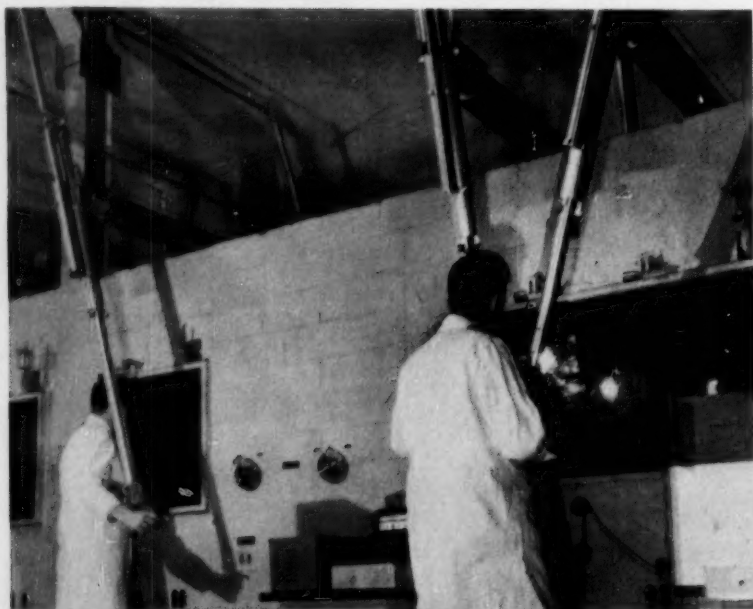
ground of your needs as possible, in order to expedite our information to you. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*



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NUCLEAR FLEDGLINGS: Burgeoning industrial atomic outlay is causing . . .

Growing Pains in Nuclear Education

A simple declaration by big, metropolitan New York University made it abundantly clear this week that atomic technology is growing up. NYU disclosed that it will begin a nuclear engineering curriculum this fall, thereby joining the half-dozen or so schools at which the chemical industry's research and development people may get a nuclear education. A sign of things to come, the NYU move can be explained by the growth of private atomic science.

Just two years ago, industry was spending about \$0.5 million/year for nuclear development. Today the rate is close to \$10 million/year and it's estimated that the figure will climb to \$300 million within four years. An effort of this magnitude calls for trained people, and plenty of them.

Thus far the principal burden of nuclear education has fallen on the Atomic Energy Commission's shoulders. But with growth and increasing relaxation of secrecy in atomic energy, the task has been taken up by colleges and universities.

Today, seven schools offer reasonably comprehensive curricula in atomic science, although many institutions now have some courses in the field. North Carolina State College (Raleigh) supports what is perhaps

the nation's best-integrated program in nuclear education. It offers courses on both undergraduate and graduate levels, confers master's and doctor's degrees in the new area of science. N. C. State was the first college to own a research reactor, an advantage not shared by companion institutions (see box).

NYU may begin construction of a subcritical nuclear reactor this summer, if its discussions with AEC bear fruit. Rated at a trifling 0.03 watt,* the proposed reactor is designed purely

* Compared with Consolidated Edison Co. of New York's planned 500-million-watt reactor.

for instruction. According to the university, it would be incapable of maintaining a chain reaction. And, unlike costly research reactors currently under construction, it reportedly would be built at a cost of a few thousand dollars.

A very simple model, the reactor blueprinted by NYU consists of a 5-ft.-deep tank of water that contains 2 tons of uranium rods. A neutron source of polonium and beryllium is housed beneath floor level and hoisted up among the uranium rods (by remote control) when necessary. Pioneer atom scientist Lyle Borst, chairman of the university's physics department, will guide the new program.

Despite increasing participation by private education, the government still accounts for the bulk of activity in atomic instruction. AEC schools at Oak Ridge and Argonne National Laboratory annually train more than 100 chemists, physicists and engineers. The Oak Ridge school of reactor technology (known as ORSORT in officialese) emphasizes physics, accepts about 80 students each September for a year of study.

Argonne, which goes heavy on engineering, is now conducting a 7-month course for 40 foreign students. Representing 20 countries, the students are reaping one of the first results of the President's "Atoms for Peace" program. Those who successfully complete the course will have earned the equivalent of a master's degree (although formal degrees are not conferred).

Because of the government's needs for trained people, enrolment at Oak Ridge and Argonne is effectively limited to personnel from AEC, the

Where To Get a Nuclear Education

These colleges and universities offer reasonably comprehensive programs

- | | |
|----------------------------------|--------------------|
| 1. North Carolina State College | Raleigh, N.C. |
| 2. Columbia University | New York, N.Y. |
| 3. Iowa State College | Ames, Ia. |
| 4. Mass. Institute of Technology | Cambridge, Mass. |
| 5. University of Michigan | Ann Arbor, Mich. |
| 6. Pennsylvania State University | State College, Pa. |
| 7. University of Tennessee | Knoxville, Tenn. |

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RESEARCH

military, and government contractors in atomic development.

A better opportunity for industry people is AEC's on-the-job training. Candidates accepted under this program go to work in an AEC installation, are assigned to regular projects and given access to classified information bearing upon their work. At the end of a year—the regular term of on-the-job training—the erstwhile trainee carries his newly acquired competence back to his company.

Industry study groups, under contract to AEC, offer another opportunity for gaining nuclear know-how. All told, about 1,000 people/year are receiving some form of government-related education in nuclear technology. Subject matter runs the gamut from purification of uranium ores to disposal of waste fission products.

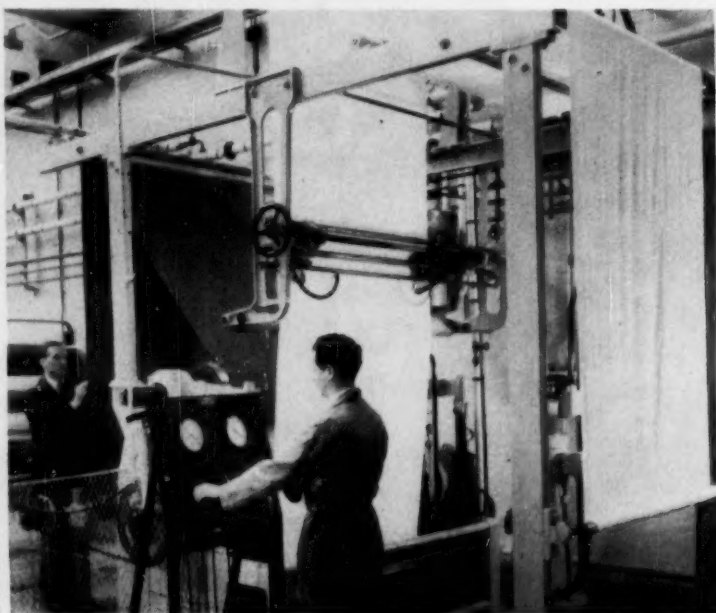
Demand for training, reports AEC, is steadily mounting and can be ex-

pected to skyrocket once industry begins converting its nuclear power paperwork into concrete and steel. The university that does not offer some instruction in nuclear technology may soon find itself among a slow-footed minority.

Busy with Oxygen

Improved techniques of synthesizing heterocyclic nitrogen oxides plus the recent availability of pyridine oxides has ignited a conflagration of research among pharmaceutical manufacturers. Spur: new and improved drugs containing the heterocyclic nitrogen oxide configuration. All of these studies are still in the laboratory stage, so commercial results have not yet been forthcoming.

But here's what is happening. Cognizant of simple new peracid techniques of oxidizing nitrogen-contain-



Textile Team Headquarters

NEW HEADQUARTERS for the pooled research efforts of England's makers of synthetic fibers are the \$1.4-million Heald Green Laboratories (Manchester). Projects such as the dyeing of new synthetic

blends (above) are supported by a \$600,000 annual budget, the bulk of which is put up by corporate members, the rest by the government's Dept. of Scientific and Industrial Research.



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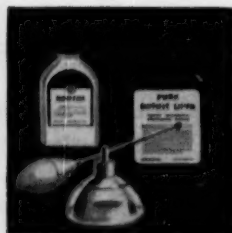
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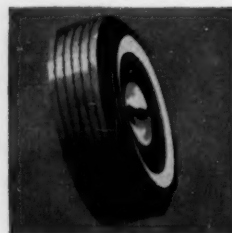
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As a chemical intermediate MBMC has proved very useful in the production of rubber chemicals, protein-based adhesives, perfume fixatives, lubrication oil additives, synthetic resins, and pharmaceutical specialties.

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Koppers Chemicals

RESEARCH

ing heterocyclics, drug researchers have set about the task of synthesizing and screening the oxygenated derivatives of many scores of physiologically active heterocyclics.

The theory is that the oxide may be more potent, less toxic or exhibit an enhancement of any one of a number of important drug characteristics. Several promising new hypnotics and sedatives are said to be coming from this approach.

Hydrogen peroxide producers such as Du Pont and Becco Chemical Division are spurring these studies that utilize peroxide-based peracids. Also actively concerned is Reilly Tar & Chemical, producer of ready-made pyridine oxides.

These heterocyclic oxides, moreover, are easily deoxygenated (e.g., with chloroform), offer a useful new route to pyridine compounds.

In addition, the presence of oxygen on the pyridine ring simplifies the traditionally difficult problem of substituting in the 2- and 4- positions. Consequently, the door is open to a bevy of now-readily synthesizable halogenated, nitrated and sulfonated pyridines.

Evaluating these derivatives in a multitude of potentially rewarding uses is occupying researchers in a variety of fields.

Fast Heater: Fisher Scientific (Pittsburgh) is offering a new line of hot plates that are said to give immediate response to control settings. Three models are available (named AllTemp, StepTemp and MonoTemp), priced at \$55, \$40 and \$17 respectively.

Test Reactor: For high-radiation testing of core materials, fuel assemblies, and other reactor components, Kaiser Engineers' atomic energy division will design and build an engineering test reactor. Contract for the project was awarded by the Idaho Operations Office of the Atomic Energy Commission.

Dark Entry: Intermedin, isolated from hog pituitaries, is under study as a possible agent in producing dark skin and hair pigments. McGill University biochemists B. G. Benfey and J. Purvis are conducting the study.

Pure Strength: Westinghouse Electric (Pittsburgh, Pa.) has prepared quantities of extremely pure iron by heating

highly purified iron chloride in an atmosphere of hydrogen gas at 1100 F. The iron crystals obtained are 0.001 in. thick, up to 2 in. long, will be used in application studies. Research Vice-President J. A. Hutcheson says the crystals are free of defects, approach 1 million psi. in breaking strength.

Tyro Chemicals: Millmaster Chemical Corp. (New York) now offers commercial quantities of five new α -substituted naphthalene derivatives manufactured by F. O. Cockerille (Greenwood, Va.). The newcomers: α -naphthalenemethanol, α -naphthaldehyde, α -naphthaleneacetonitrile, and α -naphthaleneacetamide. All are suggested for use as intermediates in the synthesis of pharmaceuticals, perfumes, dyestuffs, etc. Research quantities of α -substituted derivatives of naphthalenemethanol (e.g., esters, ethers, and thioethers) are also available from Millmaster.

Knock Boosters: According to director J. J. Mikita and B. M. Sturgis of Du Pont's petroleum laboratory, new evidence suggests that gasoline processing methods may be the key to built-in knock resistance. Speaking before the fourth World Petroleum Congress in Rome, last week, Mikita revealed Du Pont's finding that gasoline stocks with similar laboratory octane numbers display different resistance to preignition induced by automotive engine deposits. Du Pont tests also are said to show a 40-60% increase in fuel octane requirements resulting from insulating and thermal effects of deposits; 10-40% of this increase is reportedly the result of increased compression ratio caused by the deposits.

Drug Source: A new process of producing chlortetracycline is disclosed in U.S. patent 2,709,672, recently granted to American Cyanamid's Milton Petty, Jr. Details: a sterile nutrient medium comprising water, magnesium, organic nitrogen, calcium carbonate, carbohydrate, ammonium and chloride ions, traces of iron, manganese, zinc and cobalt is inoculated with a high-yielding culture of *Streptomyces aureofaciens*. The latter is permitted to grow until at least 2,000 micrograms of the antibiotic/ml. are produced.

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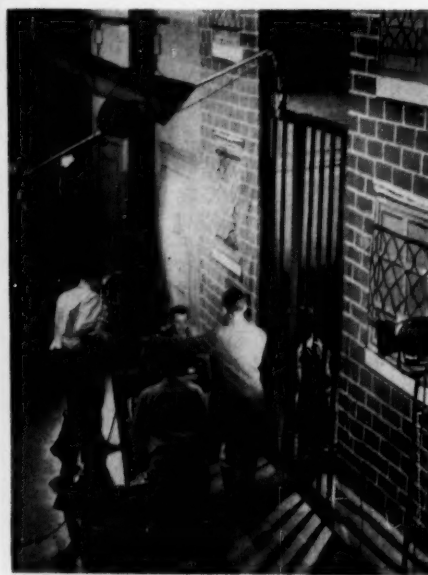
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TV'S MARCH OF MEDICINE: Mentally ill re-enact inhuman treatment of 19th-century mental patients.

DISTRIBUTION



Enigma: How to Sell Mental Drugs

Avant-garde forms of sales promotion—like the art of fire walking—can be risky as well as rewarding, may lead to hotbeds of criticism as easily as to public approbation. But sometimes there is no alternative but to step ahead boldly and hope for the best.

Case in point: Smith, Kline & French Laboratories' (Philadelphia) strategy to sell its psychotherapeutic products to budget-embarrassed officials of state mental institutions. Doubtful of a spontaneous solution, SKF has aimed an unusual campaign at the root of what many believe to be the basic problem—public apathy toward mental illness.

Reasoning that legislators will be slow to increase institutional budgets without prior public approval, the firm has initiated an ambitious educational program directed to the layman.

Disturbed Actors: Last month, for example, an estimated 18 million TV fans viewed a March of Medicine program titled "We the Mentally Ill . . ." in which mental patients of St. Elizabeth's Hospital (Washington, D.C.) enacted a historical pageant based on the life of Dorothea Lynde Dix—a 19th-century crusader for the cause of the mentally ill. Inadequate facilities in modern mental institutions were spotlighted by introducing doctors, nurses, and attendants, who participated in tours through wards.

Noteworthy was the fact that the narrator, actors, announcers, as well as most of the writers and producers, were mental patients. Dramatic impact was inevitable when, for the first time, unmasked mental patients were seen in a public program; but equally obvious were the inherent legal risks and the possible shadowing of altruistic motivations by charges of sensationalism.

Hazards Skirted: That SKF has succeeded in walking the hazardous path to public approval is due largely to good taste in program content, a minimum of commercialization, and the sanction and cooperation of reputable individuals and associations.

The tradition-shattering act of showing recognizable patients emphasized the contention that no stigma should be attached to mental illness; further, the public was made to feel that mental patients who can write, produce and act plays are not beyond hope of recovery.

The actor-patients were, of course, carefully selected; signatures of the patients, their legal representatives, the psychiatrists in charge, and government health officials were required. Moreover, moral approval on the part of reputable authorities—not directly associated with the firm—was recognized as a highly desirable safeguard against adverse criticism. Public ap-

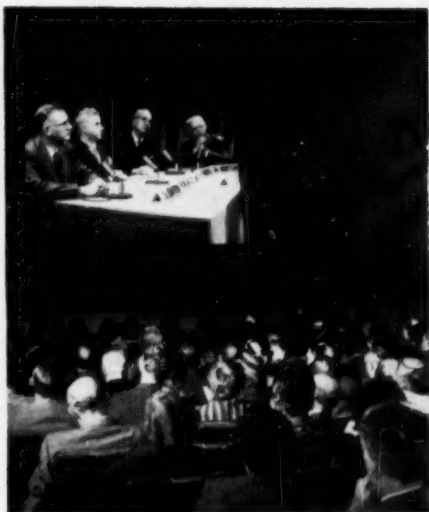
probation of the program was largely due, no doubt, to cosponsorship of the venture by the American Medical Assn., and to the participation of numerous individual psychiatrists.

Indicative of the favorable public response to the original telecast has been the need of reproducing in quantity the original film to meet requests of social, business and church groups.

Something for the M.D.: Meanwhile, the professional audience has not been ignored. Recently, a closed-circuit telecast, Videclinic, produced and sponsored by SKF and presented by AMA in cooperation with the American Psychiatric Assn., was beamed to professional groups in 34 cities. Whereas the March of Medicine is essentially documentary, Videclinic emphasizes clinical case histories.

Also, SKF has set up a fellowship fund for the American Psychiatric Assn.; it will provide \$90,000 for the support of postgraduate psychiatric training.

Others in the Act: But what of the activities of other mental-drug producers? For various reasons most have adopted a wait-and-see attitude. Chas. Pfizer & Co., Inc., and S. B. Penick & Co., (both New York) produce reserpine (a *Rauwolfia* alkaloid) but sell their products to formulators and not to the ultimate consumers. Hence



VIDECLINIC: Closed-circuit telecast briefs medical groups.

radio and TV promotion is considered outside their immediate fields of interest. The Wm. S. Merrell Co. (Cincinnati, O.) at present limits the promotion of Frenquel (a synthetic mental drug) to clinical tests. E. R. Squibb & Sons (New York), producers of Rau-sed, provide technical information to the medical profession but disclaim interest in more ambitious promotional campaigns on the grounds that false hopes may be aroused in the public mind, that extensive promotion at this time is premature.

An SKF representative, however, sees other reasons for the relative inactivity among reserpine producers; viz., any promotion of reserpine will benefit several competitors as well as the firm sustaining the cost of the program.

In contrast, SKF enjoys a definite advantage since it is the only firm licensed to produce chlorpromazine in this country. But this rosy situation may still turn out to be pale pink, for it is admitted that the firm's campaign will undoubtedly stimulate further research in synthetic mental drugs.

Too, it is entirely possible that new discoveries—not necessarily by SKF—may relegate chlorpromazine into obsolescence. Nevertheless, the current educational program is doing much to acquaint the public with the firm's name.

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next to make a bid for public attention. The firm has sponsored TV shows in the past but has not dealt with mental health because "... it would be in poor taste to start off the programs with such a subject." However, another series of TV shows is planned for next fall, and a program on mental health will be included. In this respect Ciba appears to be following the example set by SKF—presenting mental health as a natural part of an established series of medical programs.

Handle With Care: Caution, tact and proper timing appear to be far more important in the handling of mental health programs than in almost any other type of promotional work. Without exception, drug producers seem fully aware of the harm that could be done by careless presentation of a subject that so readily lends itself to sensational treatment. But if abuses in TV presentations do occur, it is highly unlikely that drug producers will be among the indiscreet sponsors.

Expanding Sales Coverage: Baird Chemical Corp. (New York) will be agent for the sale of thiourea manufactured by Miike Synthetic Industry Co., Ltd., (Japan). Price reductions for thiourea have also been announced.

- Rhodia, Inc. (New York) has appointed Burhans-Sharpe Co. (Seattle) as its Pacific Northwest sales and service representative for Alamask, a line of industrial deodorants.

- Oakite Products, Inc. (New York) has announced the formation of an export division to handle distribution of cleaning and related materials and equipment in Latin America and overseas. Harry V. Kerker is manager of the new division.

- J. T. Baker Chemical Co. (Phillipsburg, N.J.) has completed a warehouse that features a controlled dehumidified atmosphere. It will be used for storage of moisture-sensitive chemicals.

For Tomorrow's Reference: Chemical catalog—1955 edition contains specifications, shipping data, and brief sketch of end use pattern of a wide variety of chemicals. Eastman Chemical Products (Kingsport, Tenn.).

- Polyethylene resins—booklet describes nature of polyethylene, manufacture, properties, applications, and

fabrication methods. U. S. Industrial Chemicals Co., division of National Distillers Products Corp. (New York).

- Pentachlorophenol analysis—36-p. lab manual tells how to prepare various materials such as wood, soybeans, and oil-well drilling muds for pentachlorophenol determination. Monsanto Chemical Co. (St. Louis).

New Products:

- Organic intermediates—Millmaster Chemical Corp. (New York) offers commercial quantities of three new intermediates: benzyl ethylene oxide, 1-chloro-3-phenyl-2-propanol, and benzyl ethylene glycol. Suggested uses for derivatives of these materials in-

clude drugs, synergists, biocidal agents, stabilizers for chlorinated hydrocarbons, diluents for epoxy resins, and perfume ingredients.

- Carbowax pellets—Free-flowing and readily water-soluble are two of the properties claimed for pelletized Carbowax polyethylene glycol 20M by Union Carbide and Carbon Corp. (New York).

- Pentaerythritol — A nondusting technical pentaerythritol is offered by Hercules Powder Co. (Wilmington, Del.) in the form of fine granules of relatively uniform particle size. The new physical form is said to improve reaction and solution rates, minimize health and fire hazards.



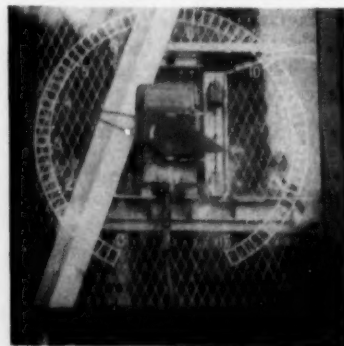
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ARE YOU FACING a tough training problem in freight handling? Having trouble demonstrating the necessity for workmanlike packing and loading of chemicals? If you are, then you might want to borrow a leaf from the railroads.

Concerned about high damage losses resulting from poor freight handling, many carriers are now acquiring Plexiglas-sided training cars, complete with impact registers (see cut, right). So equipped, it's a simple matter to show roustabouts what damage results when goods are misloaded or cars are coupled at fast speeds. Barrels, drums or crates can serve for demonstrations.

Several railroads are now invit-

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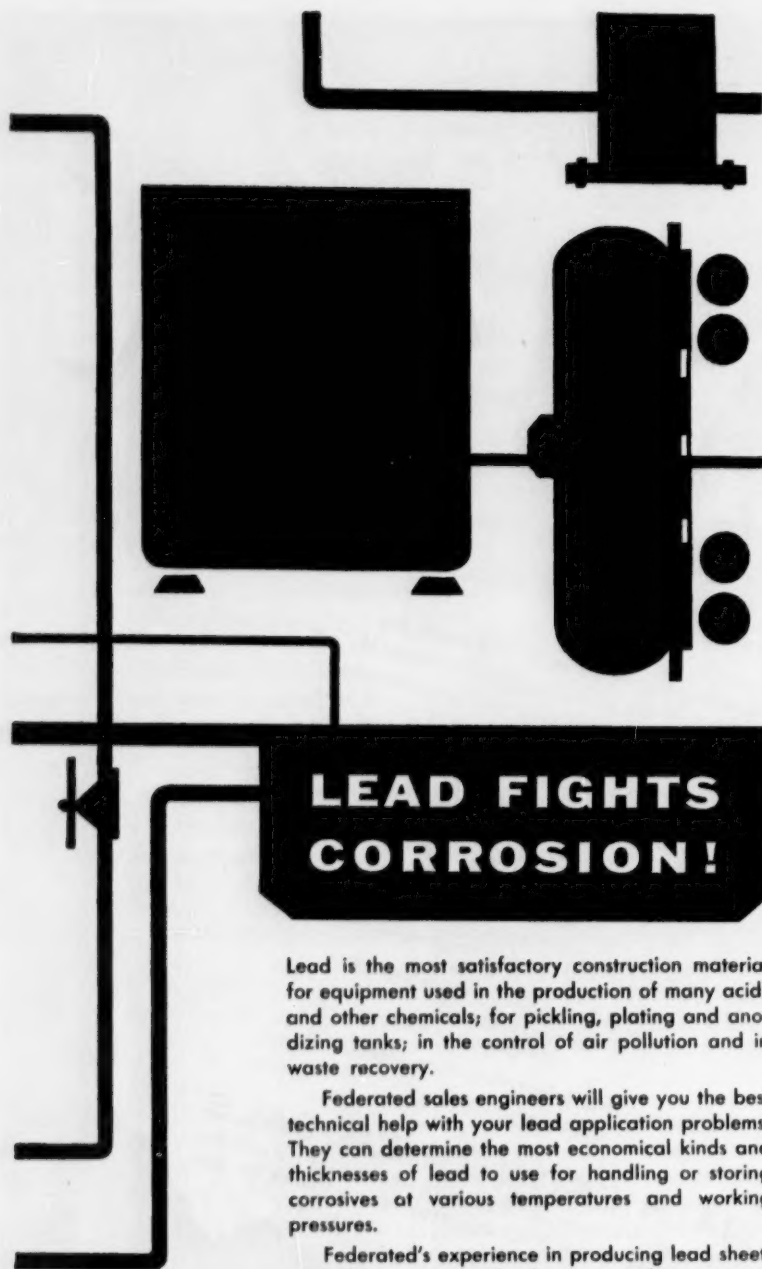
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For any information on the use of lead and lead products, write to Federated's Corrosion Advisory Service at the address below or at any of Federated's 13 plants and 23 sales offices across the nation. Or send for Bulletin No. 162, Lead Handbook for the Chemical Process Industries.



Federated Metals

DIVISION OF AMERICAN SMELTING AND REFINING COMPANY
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DISTRIBUTION



MERCK'S SCHMITT: Offer incentive, evaluate fairly and . . .

Speak Up for Service

In today's slam-bang competitive markets, it's a rare chemical company that isn't using every good sales tool it can. As one of the staunchest supports for any sales structure, technical service is getting plenty of use. Chemical firms find it only smart business to help customers make the most efficient use of their products.

Despite the readiness of a supplier to part with technical knowledge and the buyer's potential profit therefrom, some companies aren't making all the use of technical service they might. Taking up just this point at the recent Chemical and Allied Products Buyers' Group meeting of the National Assn. of Purchasing Agents in New York (May 31), Fredrick G. Schmitt, director of purchasing, Chemical Division, Merck & Co. (Rahway, N. J.) asked these questions:

- What does a customer do to make his technical needs known to his suppliers?
- What incentive is offered to encourage the supplier to give technical support?
- Who evaluates the significance of the supplier's new developments?

Competition, says Schmitt, demands the finding of "ways of preserving the confidential aspects of a customer's position and of establishing intimate relationships."

No less an obstacle, however, is the lack of incentive offered suppliers

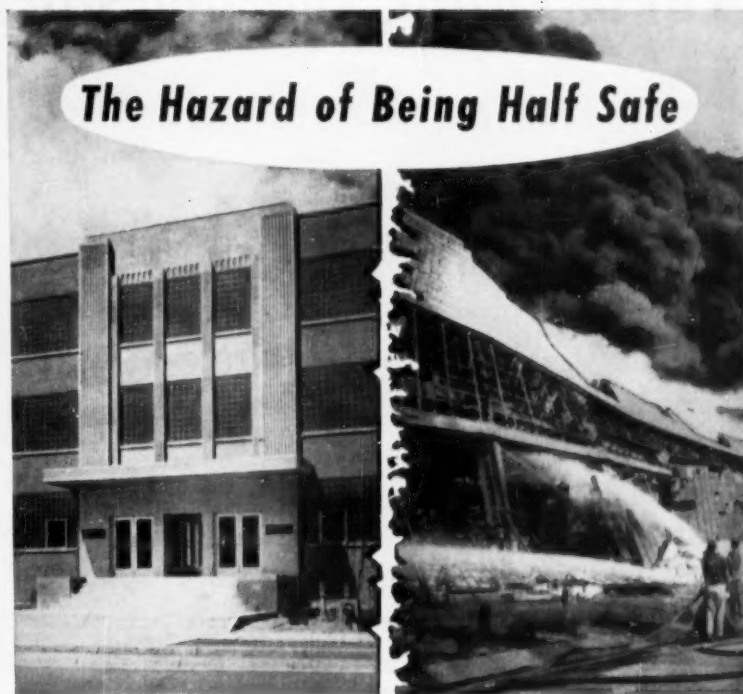


SHARPLES' GILLETTE: For vendors, service is opportunity, obligation.

to extend their services. Many a supplier will go "all out" on service efforts if his products get a "fair hearing."

From the purchasing agent's viewpoint, a fair hearing means "promoting greater contact between well-prepared supplier representatives and the technical areas of our companies." And, the question of fair hearing raises that of the evaluation of the supplier's developments. Says Schmitt: just about everybody in the company is evaluating potential supplier's technical developments. It's part of the purchasing agent's job to "gather these evaluations so that buying reflects not only our judgment of commercial factors but also the research man's slant on the future and the views of others."

Scope of Service: Reviewing supplier services, Leslie Gillette, chief chemist, Sharples Chemicals, Inc. (Wyandotte, Mich), cited various areas in which buyers may be aided: technical information, advice and assistance (product use, recovery, analysis); cooperative investigation; quality, use, or specification complaints; and liaison work (discovering buyer's problems). These fields "offer an opportunity for the vendor to improve relationships with the buyer," but carry "the obligation . . . to see that the buyer can efficiently and economically use his product." But efficient use of technical service demands good intercompany communications and the recognition of the value of service rendered—a first-class purchasing problem.



The Hazard of Being Half Safe

Any plant addition in which "Automatic" Sprinklers have not been extended is a weak link in the chain of protection. It's a critical area in which fire may cause considerable property damage and complete disruption of business continuity. Once out of control, fire in an unprotected section might possibly lead to complete destruction of property, even though other building areas are protected.

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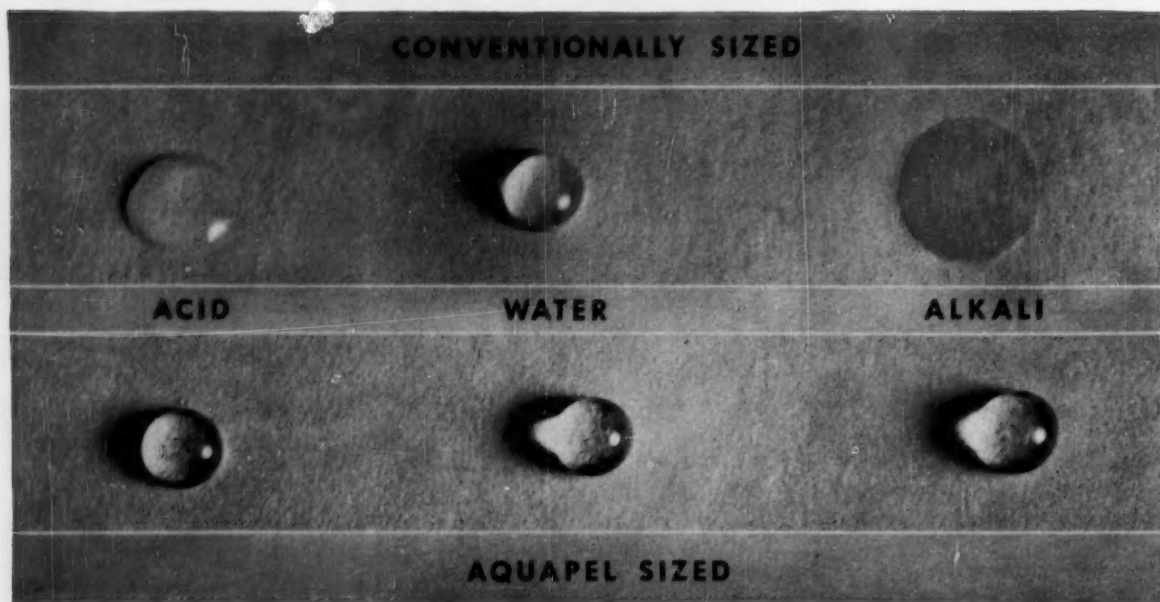
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throughout all buildings susceptible to fire. Being 100% protected 100% of the time is good business. And — it's well to remember — **what's worth insuring is worth protecting!**




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These Drops Tell the Story:



ACID, WATER, OR ALKALI— IT'S ALL THE SAME TO AQUAPEL®

 More and more paper mills are finding out that a little Hercules Aquapel can make a big difference. The photographs above tell part of the story.

The same grade of paper was used for both tests, but one sheet was conventionally sized; the other was Aquapel sized. Drops of acid, water and alkali were placed on both, and while the conventional sizing has resisted only the water, Aquapel has prevented all three from penetrating the surface.

One of the reasons for Aquapel's superior performance is that Aquapel is not just "another sizing agent". Aquapel is an entirely new concept in sizing for the paper industry. Neither resin nor wax, Aquapel is a chemical compound—an alkylketene dimer. It reacts chemically

with cellulose fibers to form a surface that is resistant to penetration of cold water, hot water, acid and alkali. Aquapel sizing is not just "stuck on"; it becomes an integral part of the fiber.

There are other differences. For example, while Aquapel usually is applied on the surface, it is not a surface size in the usual sense. It replaces rather than supplements beater sizing with rosin size and alum.

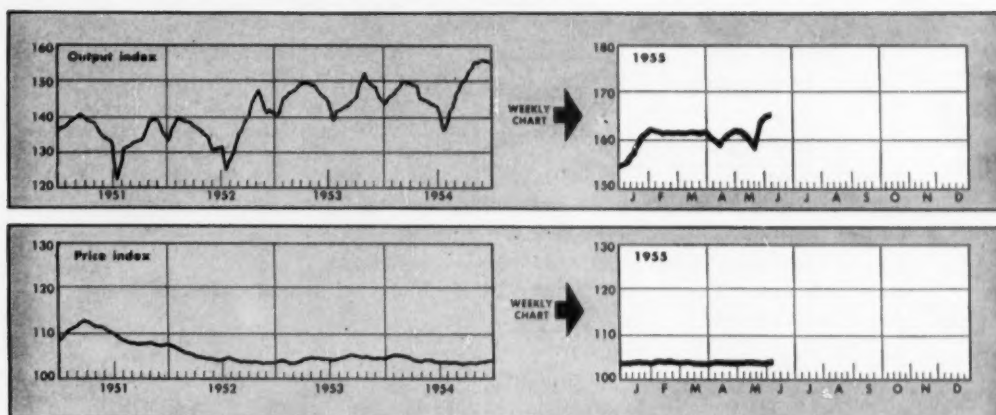
Aquapel may be applied by any equipment commonly used for surface treatment of paper, such as the size tub, size press, calender box, spray or coating machine. And Aquapel is economical—a little goes a long way.

Investigate the Aquapel difference for yourself. Write Hercules for a sample, and descriptive literature.

Paper Makers Chemical Department
HERCULES POWDER COMPANY

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MARKETS



WEEKLY BUSINESS INDICATORS

CHEMICAL WEEK Output Index (1947-49=100)	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Wholesale Price Index (1947=100)	164.2	166.5	144.4
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	104.2	104.2	104.2
	430.7	419.5	289.8

MONTHLY INDICATORS—Foreign Trade

(Million Dollars)	Exports			Imports		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
Chemicals, total	\$93.3	\$84.1	\$66.7	\$27.8	\$20.4	\$26.1
Coal tar products	6.3	6.6	4.7	3.5	2.5	1.9
Industrial chemicals	14.2	11.5	10.5	6.4	5.4	4.3

MARKET LETTER

Price boiling of the past few weeks has apparently slowed to a simmer, but a few more hikes effective immediately (July 1 to contract customers), were posted during the last seven days.

No surprise, of course, after the advances in several ethylene glycols (*CW Market Letter*, June 11), are the higher prices for both industrial and USP grades of propylene glycol, and propylene oxide. Behind the latest increases: a now-familiar "higher production cost" plaint.

Tank-car tags on dipropylene, propylene, and tripropylene glycols, as well as on the oxide, are up $\frac{1}{2}\text{¢}/\text{lb.}$; but while the latter's drum quantity price moves ahead by a like $\frac{1}{2}\text{¢}$, the glycols' c.l. and l.c.l. prices are increased by $\frac{3}{4}\text{¢}/\text{lb.}$ The new 2¢ differential on drum prices pegs industrial propylene glycol (c.l.) at $15\frac{1}{2}\text{¢}/\text{lb.}$; USP material, in c.l. or truck-load lots, $17\frac{1}{2}\text{¢}/\text{lb.}$ These are delivery-in-the-East quotes; Western buyers are nicked 1¢/lb. more.

The formaldehyde market sported a split price last week. Reichhold Chemicals moved over to the higher side of the line early in the week, while most other sellers hesitated. The increase — $\frac{1}{4}\text{¢}/\text{lb.}$ across the board — boosts Eastern tank prices on uninhibited material to \$3.75/cwt.; \$4/cwt. in the West.

The higher formaldehyde prices (effective immediately to spot customers, July 1 on contract) are attributed to the recently more costly methanol.

Demand for formaldehyde has of late been zipping right along.

MARKET LETTER

Calls, particularly from synthetic resins and plywood formaldehyde glue outlets, have producers moving their output with little difficulty.

On the other hand, copper sulfate users, in a few instances, are experiencing some shipment delays. Demands, from both industrial and agricultural customers, have pressed sellers to fill orders — and most expect business to become even more brisk.

Prices of most copper chemicals are still high (*CW Market Letter*, April 9), but tags are firm, there's little indication of any changes in the immediate future.

There are some significant upcoming factors bound to change glycerine's outlook. U. S. synthetic supply potential, for instance, will be boosted by about 36 million lbs./year with entry, late this summer, of Dow's long-heralded plant at Velasco, Tex.

And Archer-Daniels-Midland's new fatty alcohol installation at Ashtabula, O.—officially opened last week—will also have a glycerine side-effect. The polyol, along with caustic soda, will be an important by-product of ADM's higher fatty alcohols production.

At the moment, consumer pressure on available glycerine is still fairly heavy (has been for several months). No contract customer is being shorted, of course; but some, looking for extra material, are having a little difficulty. Chances are, though, summer will bring with it the usual vacations-induced letup in demand.

Skidding glycerine stock is one indication of the recent fast tempo of the market: as of March 31, reports the Assn. of Soap and Glycerine Producers, inventories totaled 40,898,000 lbs.; at the end of April stocks were down to 40,351,000 lbs. Last year's April figure: 64,000,000.

Chlorine marketers, too, have little to complain about. Fact is, demand is so good that supplies are reported to be leaning toward the tight side in some areas. Biggest reason: increasing seasonal calls from water and sewage treatment outlets.

Adding to the spotty chlorine pinching: strong buying by other users, particularly paper and chemicals. Carbon tetrachloride, perchloro- and trichlorethylene, for example, also nudged upward by seasonal requirements, are taking sizable quantities.

Gray-tinged cloud in some chlorine producers' sky: the electrolytic chlorine push has swelled caustic soda output, raising, in a few sections, the specter of oversupply.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending June 13, 1955

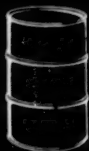
UP

	Change	New Price		Change	New Price
Glycols:			Tripropylene, drms., c.l., frt.		
Propylene, industrial, drms., c.l.,			alld., E.	\$.0075	\$.2050
divd., E.	\$.0075	\$.1550	Formaldehyde, (uninhibited), tanks,		
Dipropylene, drms., c.l., frt.			divd., E.	.0025	.0375
alld., E.	.0075	.1725	Stannous sulfate, drms., wks.	.005	.929

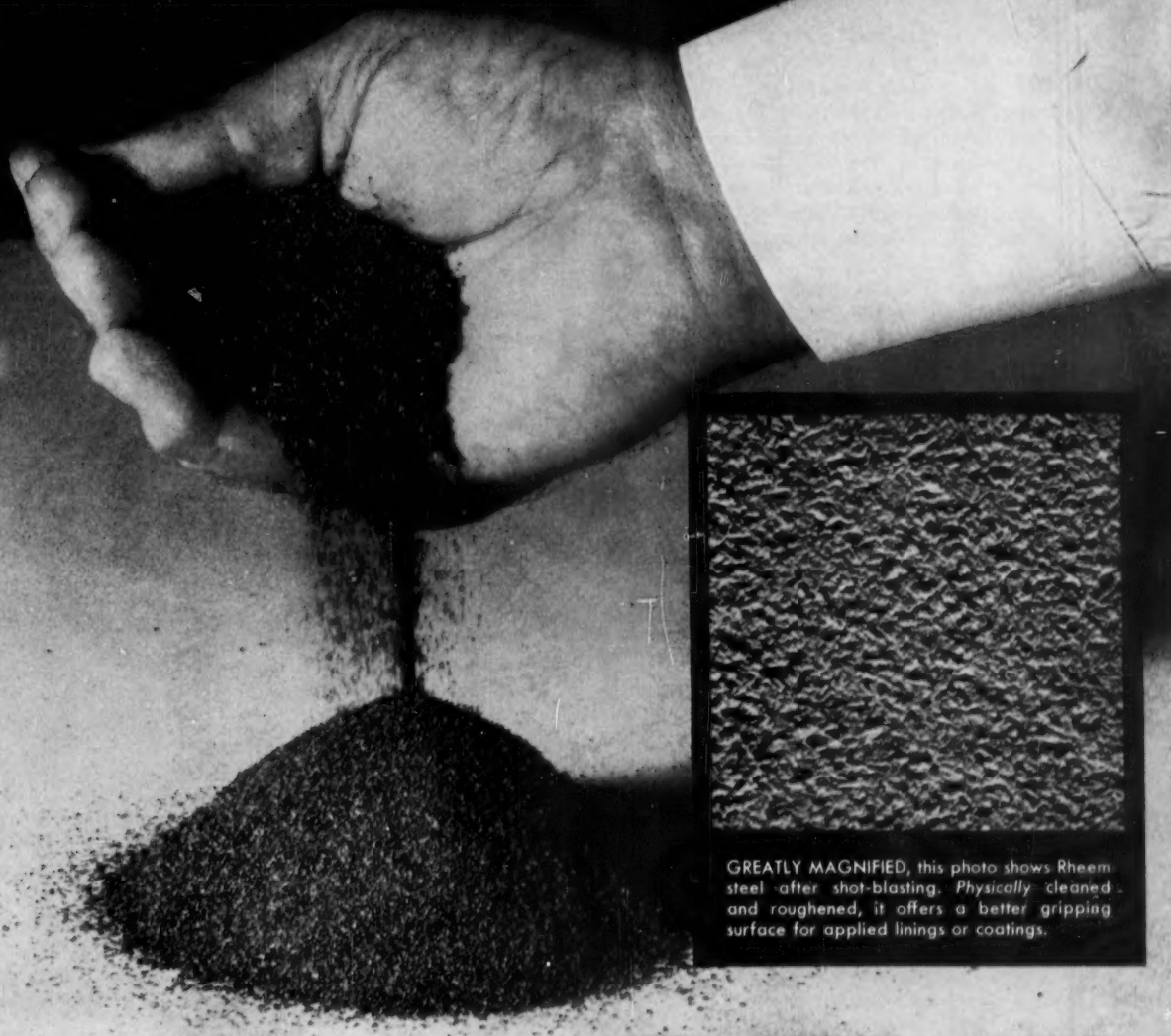
DOWN

Mercury metal, 76-lb. flask, net,			Sodium antimoniate, bbls., c.l.,		
flask	\$7.00	\$288.00	divd., E.	\$.01	\$.28

All prices per pound unless quantity is stated



HILLS AND VALLEYS MAKE BETTER STEEL DRUMS



GREATLY MAGNIFIED, this photo shows Rheem steel after shot-blasting. Physically cleaned and roughened, it offers a better gripping surface for applied linings or coatings.

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Look at the insert above. It shows you the hills and valleys in a piece of shot-blasted steel . . . the steel Rheem uses to give you a better steel drum.

This shot-blasting—the first and most important step in preparing the steel for forming—*physically* cleans and roughens. Millions of carefully sized high-carbon steel pellets bombard both sides of each steel sheet . . . blasting away scale . . . roughening the surface . . . carefully preparing the metal to receive protective linings or exterior coatings.

As a result, when we apply an interior lining or outer coating to a drum, it gets a bulldog grip on scientifically roughened steel. We get a better bond of steel and coating. You get a better drum. Also, because Rheem's shot-blasting gives the steel a "passive" surface, it retards oxidation of *uncoated* sheets.

Next time you place an order for steel containers, remember this: Rheem *physically* cleans its steel by shot-blasting before fabrication. For *any* drum—plain, lined or decorated—that means longer life.

YOU CAN RELY ON



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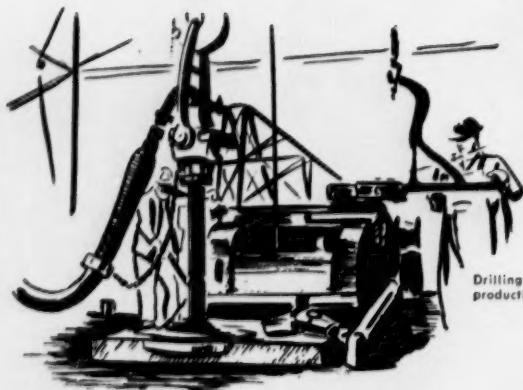
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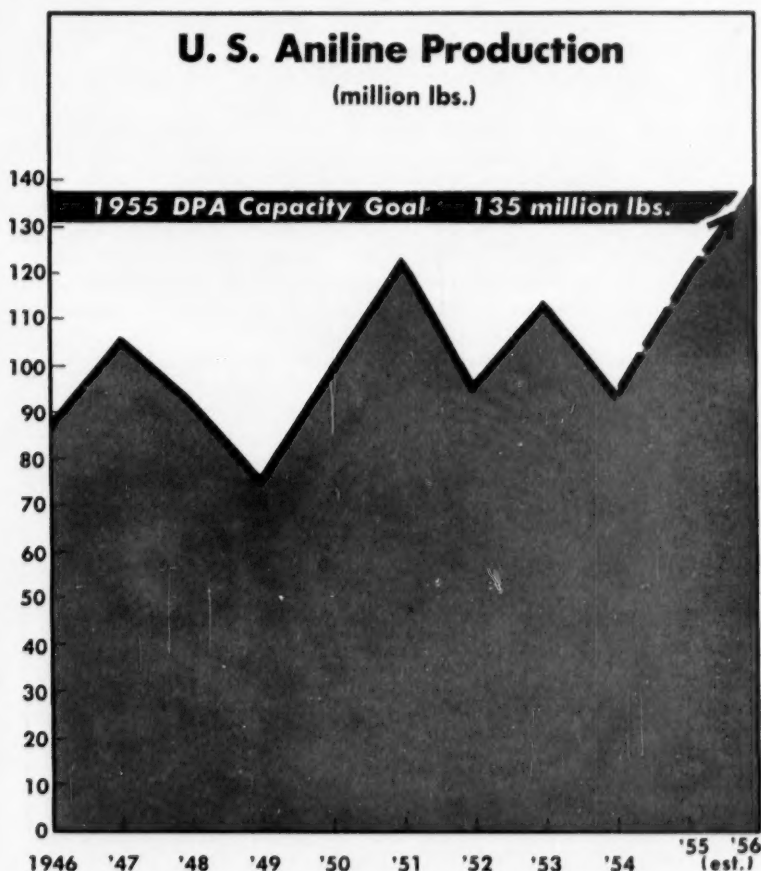
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ANILINE OUTPUT: Finally, a break through the ceiling.

Another Spurt for Aniline

Aniline oil, oftentimes headed for the big-league level—and falling back with demand's capriciousness—will, within a year or so, finally achieve giant-size stature. Production, including that from National Aniline's recently an-

nounced (CW, May 21, p. 16) capacity-doubling at Moundsville, W. Va., will smash through the old Defense Production Authority's aniline goal of 135 million lbs./year.

Actually, DPA's 1955 capacity target

has long since been hit; even without the new expansion, the aniline industry was capable of that much production. But output, tied as it is to two chief consumers, rubber and textiles, has until now only once come anywhere near striking distance of full U.S. potential. That was during '51—peak year for just about all chemical products due to the Korean War—when producers turned out nearly 123 million lbs. of aniline.

By the end of this year, say marketers, who are hustling to keep up with orders, '51's rate may well be overshadowed. At least one is convinced that production will tally close to 130 million lbs. And in 1956, if producers continue to make and sell the intermediate at today's bustling pace, perhaps as much as 140 million lbs. will be consumed.

Although National (using its unique continuous, vapor-phase catalytic method) is the only maker to date to reveal plans for expansion, there's more than trade talk bolstering speculation that other major aniline producers are thinking along the same lines.

(American Cyanamid, Dow, Du Pont, and National currently account for bulk of the aniline made in the U.S. Ciba and Naugatuck follow the van, but Naugatuck's primary interest is captive—it makes more for its own use than it sells.)

Aniline buyers have found, over the years, little cause for complaint in the chemical's price picture; it's been remarkably steady for the most part. For 17 years (1930 to 1947), producers' tags hovered in the 10-12¢/lb. range; began rising, but only gradually, in '48.

The current price, 20¢/lb. (tanks), has been posted for just about a year; and, shrugs one seller, at the moment there seems to be no reasonable justification for a price increase.

Rubber Bound: Biggest aniline maws continue to be anti-oxidants and accelerators for the rubber industry as well as dyes and intermediates consumed by the textile trade. A couple of decades ago, the latter was No. 1 in the aniline use parade, but the surge of synthetic rubber—because of the wartime cutoff of natural supply—has enabled it to wrest top spot from the older outlet.

This year alone, rubber customers may be shopping around for more

Estimated Aniline End Use Pattern, 1955

(million lbs.)

Rubber chemicals (chiefly anti-oxidants, accelerators)	80
Dyes, intermediates	19
Veterinary pharmaceuticals	8
Drugs	4
Photographic chemicals (chiefly hydroquinone)	2
Other	7

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MARKETS

than 140 million lbs. of anti-oxidants and accelerators—most of them derived from aniline. The future, too, holds no threat of a slackening.

Already fulfilled, and likely to be well exceeded, are earlier predictions that the transfer of synthetic rubber plants from government aegis to private industry would impel rubber use and production.

For instance, new rubber consumption during '55 was estimated to surpass '54's (by an impressive 57,000 long tons), to reach a rate of 1.29 million long tons/year. This was somewhat under the 1.338 million racked up in '53, record year in rubber use. Now some acute market analysts are betting the '53 record will topple this

year, wind up low on any consumption compilation covering the next five years.

And there's no deactivation of plants in rubber's future (except as they're replaced by new installations), as there was in '49, to drag the output rate down (see chart).

It all means a continuing brisk business for aniline sellers. For although both natural and synthetic rubber are aniline users, the man-made product takes about 40% more accelerators for vulcanization.

Textile Trending: The noticeable pickup in textiles—with its concomitant recovery in dyestuff consumption—will further spur aniline use in coming months. One reckoning of aniline



Barnyard Market Grows Fast

POULTRY AND PIGS have in many instances outstepped people as consumers of pharmaceutical products. Pointing up the marketing attention that is channelling vitamins, penicillin, Aureomycin and other items to the barnyard is Nopco Chemical's new line of feed supplements.

All the new Nopcosols contain vitamins A, D, B₁₂, and E, riboflavin, pantothenic acid, choline, niacin, and trace minerals. In addition,

procaine penicillin is used in the poultry starter and growing formulas, Aureomycin in the swine product, and vitamin K, methionine, and arsanilic acid in the supplement for broilers.

Nopco's line, following the trend toward higher-energy feeds, gives animal and poultry feed mixers all the essential supplementary vitamins, trace minerals, and growth stimulants in one package (see cut).



Bringing new products into **FOCUS**

Could millions of photography fans make a market for a portable dark room sink?

LOW-COST PRODUCTION OF SUCH AN ITEM IS PRACTICAL WITH REINFORCED PLASTICS!

The need for a dark room sink is keenly felt by millions of men and women whose hobby is photography. They now lack proper facilities for doing their own printing and developing.

Their problem could be solved by a portable unit which sets up quickly in basement, kitchen or bathroom—and stores out of sight in a closet.

The ideal material for such a sink is at hand. By using fibrous glass, bonded with polyester resins, the sink could be molded in one piece. Its weight would be negligible. Its strength would be great. And its cost could be low.

Rounded corners would assure easy, thorough cleaning. There would be no worries about corrosive chemicals

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The use of reinforced plastic materials grows every year. They are already widely applied to sports car bodies, boats, corrugated building panels, modern furniture.

Monsanto supplies the basic ingredients for polyester resins. These include Monsanto *styrene monomer* and *phthalic* and *maleic anhydrides*.

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Neopone LO is available for immediate shipment. To assure prompt delivery, we maintain stocks in Paterson, N. J., Chicago, Ill., and Atlanta, Ga. Packing—bags and drums.

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MARKETS

consumption in dye and intermediate outlets for '55: some 19 to 20 million lbs.

That figure is expected to improve in succeeding years, for it's unlikely, say textile people, that their industry will soon again suffer the slump of a few years ago. The interest in new synthetic fibers and blends is the hoped-for fillip that is tabbed to brighten textile prospects.

More and Wider: Although rubber chemicals and textiles are the major aniline industry props—between them are expected to take more than 80% of the supply available this year—some outlets are showing signs of moderate widening, while others hold an explosive potential for aniline gulping.

Falling in the first category of steady aniline uptake is the field of veterinary medicines. For example, sulfa drug consumption by animals long ago passed the amount consumed by humans; and the practice of emphasizing better livestock care is established to the point where it will continue to push aniline use. Another derivative, diphenylamine, is also on the move. Formerly used almost exclusively for sheep, vets are finding it effective for cattle.

But if there's any consumer that could strain total U.S. aniline capacity, it's a wartime government. Reason: many explosives stem from the intermediate. (A few ordnance plants, now in standby condition, have some aniline capacity, but it would take time to reactivate them.)

Add too, some hush-hush military projects; e.g., a recently developed rocket fuel said to be a blend of three compounds, one of which is aniline.

At the moment, though, government inquiries are relatively small, are buried in aniline's "other uses." And unless a shooting spark ignites military demand, as it did in '41 and '50, these outlets will continue to have little impact on the market.

More important to aniline makers is the state of the established market, today and tomorrow. It's good, gives every indication of getting better. Demand, paced by a ballooning rubber industry and reawakened textiles, is pushing sales along at a buoyant level.

And, says one producer: "If DPA were setting another aniline expansion goal for five years hence, it would probably set its sights up near the 170-million-lbs./year mark.

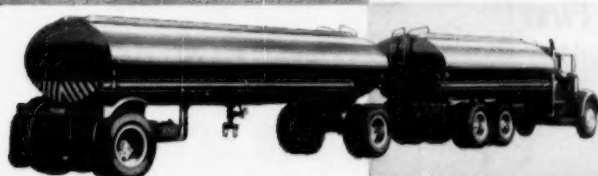
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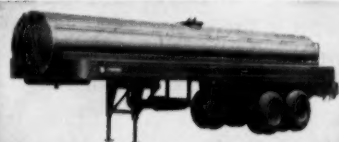
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Stainless Steel Alcohol Tank-Trailers



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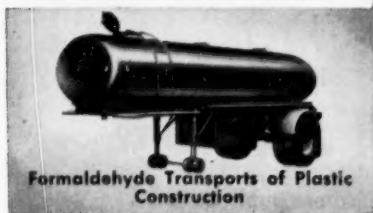
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New Snap-Open Sack OPENS EASIER, FASTER



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Economy number one: Here's a bag that opens so easily even a 10-year-old girl can open it, and this ease of handling means *faster* handling for your customers with more units per day per man!

Economy number two: Reduced product spilling means real savings for your customers when you use the new Snap-Open Sack, the bag your customers will begin to demand after your very first shipment.

Yes, you offer multiple advantages to your customers when you bag your product in the Snap-Open... advantages that will result in increased sales and customer satisfaction.

Hudson actually went out into the field and asked your customers what they wanted in a multiwall bag. Their answer: a multiwall that would open easily, quickly. The result: the Snap-Open Sack—the bag that opens in an instant, gives you pour-control from a thimble-ful to a hundred pounds, by simply opening the bag a few inches or all the way!

Be among the first in your industry to cash in on this newest multiwall bag which Hudson is pre-selling to customers in farm magazines such as Capper's Farmer and Progressive Farmer, as well as other national consumer publications.

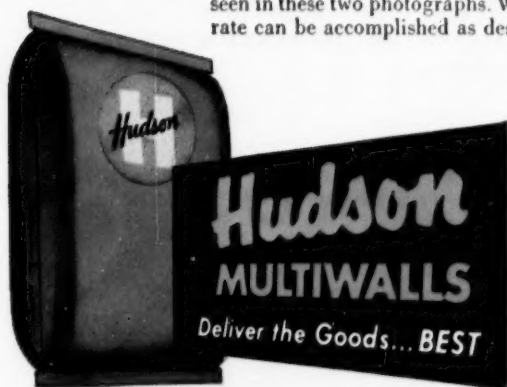
THAN ANY OTHER BAG



PULL AND TUG DAYS of opening bags are over! Actual light tracing photo shows how knife blades and pull-and-tug method (*left*) actually waste both time and product, while easy snap motion opening of new Hudson multiwall saves time and saves product.



SIMPLE BUT DRAMATIC demonstration of Snap-Open's *controlled* pouring is seen in these two photographs. With Snap-Open, spilling is at a minimum, pour-rate can be accomplished as desired from a thin stream to a hundred pounds.



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MCC'S RIVERTON PLANT: Largest pilot operation in uphill fight to develop economic . . .

Manganese Independence

Plentiful imports of foreign manganese ores teamed up with declining consumption in 1954 to take the heat off General Services Administration's investigation of chemical processes of extracting this strategic metal from low-grade domestic ores. But GSA's Emergency Procurement Service is still pursuing likely processes, though at a more leisurely pace, expects to have the answer by this time next year. Ultimate goal of EPS is to line up one or more methods that will handle ores from all low-grade domestic sources—particularly those from the extensive deposits in Aroostook County, Maine, and the Cuyuna Range in Minnesota. Progress of the program, to date, rules out the possibility of upgrading sub-metallurgical stocks by classical ore-dressing techniques alone, points to combination roasting-leaching processes as the best bet to guarantee supply in an emergency.

But the dim economic outlook for manganese upgrading doesn't figure to attract many producers to this field. For one thing, operation would require a fairly large plant (probably at least 100 tons/day) and initial equipment costs are high. And even with good recovery of chemical reagents or markets for byproducts, it's doubtful that domestic manganese dioxide could compete with cheap imports, except in small market for premium-grade

manganese, e.g., low-carbon ferro-manganese, battery-grade product. Here are some of the processes that have hit closest to the mark:

Carbamate Extraction: Most promising results so far have been those obtained by Manganese Chemical Corp. (Riverton, Minn.). Currently operating at half capacity, this recently expanded \$2-million plant daily turns out some 35 tons of manganese carbonate (60% Mn) from 100 tons of Cuyuna Range ore.

MCC uses the Dean-Leute process—a combination of roasting and leaching. The ore, principally manganese dioxide, is reduced to manganous oxide by roasting in an oil-fired shaft furnace. Product is then ground to about -35 mesh, slurried with a solution of ammonia and carbon dioxide (carbamate) at room temperature to extract metal as a complex salt, manganese ammonium carbamate.

Dissolved manganese is separated from insoluble gangue by five counter-current decantations in thickeners. The solution, containing 1-1½ lb./gal. of complex salt, is then heated by steam to drive off ammonia, which is absorbed and recycled to the slurry tanks. Manganese is precipitated as the carbonate, which is centrifuged and dried at 200-250 F to produce a fine powder of about -325 mesh.

Manganese carbonate is readily con-

verted to nodules of manganese dioxide for use in making steel, or can be used by itself as a basic material for electrolytic and other chemical processes. Some of the added advantages bolstering MCC's hopes:

- Equipment can be fabricated of mild steel since no acids are used.
- Only manganese is leached from ore, giving high purity at no extra cost.
- All reagents are volatile and therefore easily recovered.
- Process works on all ores except silicates.

It's too early, the company feels, to disclose the economics of the operation. But it has expressed satisfaction with the high yields, smoothness of the operation, and costs "no higher than anticipated" which have been the story to date.

Nitric Leaching: E. S. Nossen Laboratories, Inc. (Paterson, N.J.) had considerable success with a 1,000-lb./hour pilot plant extracting Aroostook County ore with nitric acid. Though it wasn't necessary to reduce the Maine ores to the manganous form before leaching, the Nossen process provides for a multiple-hearth reducing kiln to adapt it to other types of manganese stocks.

Extraction of ground ore begins with the addition of nitric acid diluted with wash water from previous runs. Man-

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ganese, calcium and magnesium are put into solution at 175-190 F, separated from the complex iron oxides, silica, and alumina by a disk-type, continuous vacuum filter. Gangue is water-washed to return entrained nitric acid to the leaching solution, while nitrate solution is evaporated at 240 F to a slurry of 65% solids by weight.

Nitrate slurry is decomposed in a steam-heated, double-drum dryer to produce manganese dioxide and recover nitric acid (some as nitrogen dioxide). Product is washed to remove soluble calcium and magnesium impurities, flash dried with hot gas.

When calcium content of ore is low, sulfuric acid can be added to the leaching solution to precipitate calcium, barium, and lead. But with high-calcium ores, it's more economical to omit sulfuric, recover calcium nitrate for fertilizer.

Though Nossen had demonstrated the technical feasibility of nitric leaching before plant was shut down last November, results were not complete enough for a thorough economic evaluation. However, it is estimated that the break-even point would require a production rate of at least 100 tons/day of finished product.

Laboratory work on the process has been continued and has yielded at least one promising shortcut to be tested when pilot-plant operation is resumed. The new twist involves high-temperature decomposition of the nitrate slurry to minimize nitric acid recovery from byproducts, eliminate washing and drying of manganese dioxide. The shortcut results in a slight drop of manganese in the product (from 56% to about 50%), increase of calcium and magnesium oxides to about 20%. Though not as suitable as the premium grade for special purity applications, impure grade would be adequate for metallurgical use.

At the present time, Nossen is awaiting GSA's decision to continue nitric process development, particularly on Western ores from Arizona, Demming, N. M., and El Paso, Tex.

Pressure Oxidation: Another company that feels it has a good chance to snag a fair share of any sizable market for domestic manganese is Chemetals Corp. (New York). With rights to Chemical Construction's highly touted process, Chemetals has piloted the operation at Battelle In-

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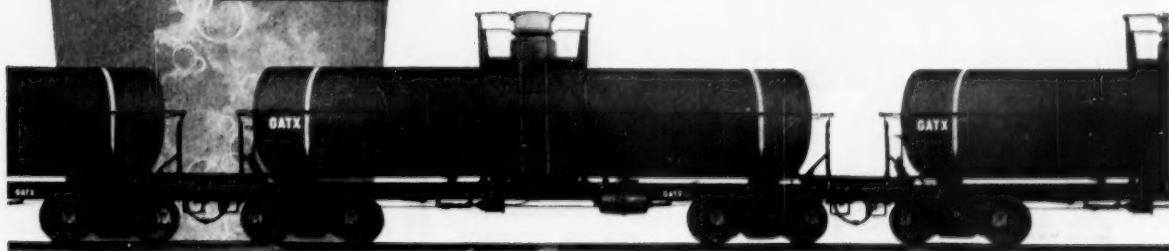
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stitute, proved to its own satisfaction that it's feasible from both technical and economic standpoints.

The Chemico process employs sulfur dioxide to leach ore that has been ground to about -65 mesh, concentrated to 20% manganese content by conventional gravity separation. Leaching slurry is oxidized with oxygen or air at high temperatures in an autoclave under 1,000 psi. pressure to increase conversion of manganese into the sulfate. Solution is separated from gangue by filtration, concentrated by evaporation to precipitate manganese sulfate. Sintering follows to recover sulfur dioxide for recycling to the leach, turn out manganese as an oxide.

Though not the first to use sulfur dioxide (Anaconda Copper and Phelps Dodge also tried it), Chemetals is the first to achieve economic results with it. The key: pressure oxidation that steps up recovery to 96-97%, reduces side reactions. Added advantage: preliminary roasting of ore is unnecessary. Process works with any manganese ores, including silicates.

Sulfur dioxide is also used in the new dithionate process developed by U. S. Bureau of Mines at Boulder City, Nev. In this process, manganese dioxide ore is leached with sulfur dioxide in which it forms the sulfate and dithionate. The subsequent addition of lime precipitates manganese hydroxide, generates calcium dithionate to be used for pulping ore in the leach circuit.

In a pilot operation on 9.6% manganese ore from the Artillery Peak deposit in Arizona, USBM obtained 90% recovery, turned out a product containing 60% manganese.

In the Works: Still to be evaluated under the EPS program: a hydrochloric acid leaching process being set up by L. W. King (Salem, O.); Diamond Alkali's (Painesville O.) Sylvester process; and one by Bruce Williams Labs (Joplin, Mo.), which involves a novel use of known reagents.

In view of the present manganese glut, even the most successful extraction process would need government support before it could entice investors into a commercial venture. But in an emergency, there'd probably be room—even a necessity—for all feasible methods that could guarantee our supply of this vital strategic product.

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Fission Patrol Angles for Atoms

BRITISH CONCERN over the potential hazards of atomic waste disposal by dispersal in air and sea (CW, June 11, p. 44) has resulted in an unusual assignment for "fishermen" aboard the government's Mary Munro III. Patrolling the coast waters off Cumberland, they

employ scientific sampling instruments instead of nets to haul in catch of "hot" wastes from Sellafield atom station. George Taylor (sampling air, above) is one of the anglers who check concentration of fission products from gas stacks, underwater discharge pipes.

ing jobs with the do-it-yourself kit now available from the American Agile Corp. (Bedford, O.). Kits come complete with a 110-volt welding gun, accessories, two instruction books.

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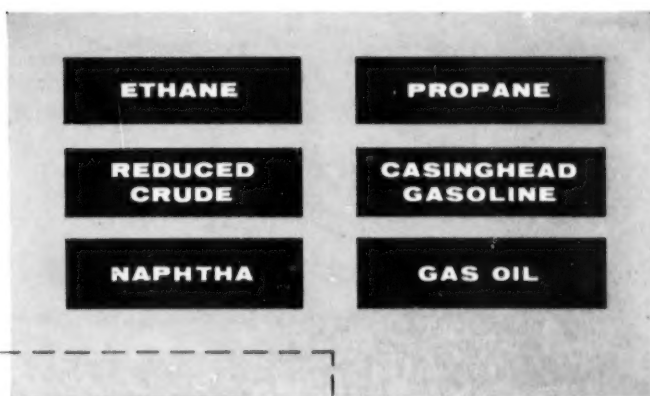
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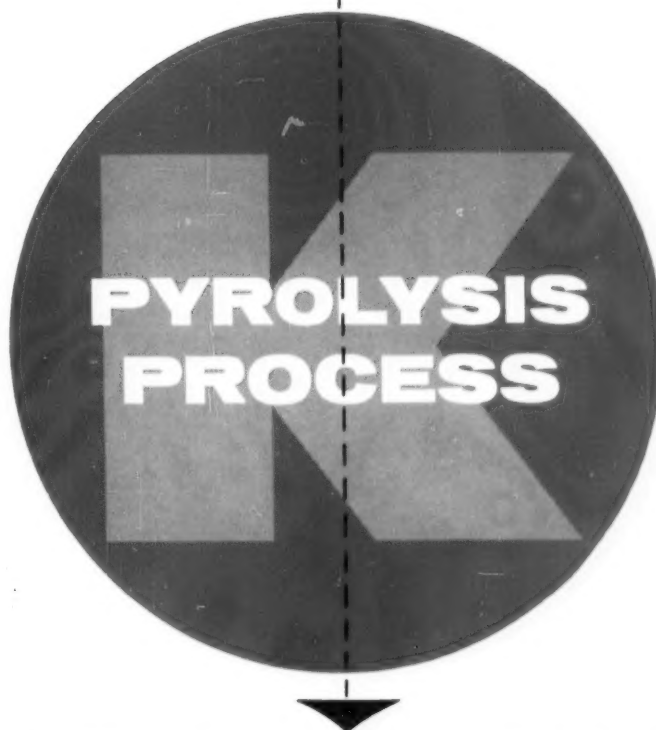
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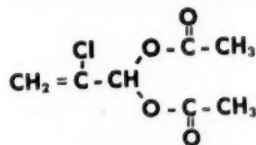
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